Catalogue no. 91-215-X
ISSN 1911-2408

Annual Demographic Estimates: Canada, Provinces and Territories (Total Population only)

2018

Release date: September 27, 2018

Statistics Canada Statistique Canada

Canada

How to obtain more information

For information about this product or the wide range of services and data available from Statistics Canada, visit our website, www.statcan.gc.ca.

You can also contact us by

email at STATCAN.infostats-infostats.STATCAN@canada.ca

telephone, from Monday to Friday, 8:30 a.m. to 4:30 p.m., at the following numbers:

- Statistical Information Service 1-800-263-1136
- National telecommunications device for the hearing impaired 1-800-363-7629
- Fax line 1-514-283-9350

Depository Services Program

- Inquiries line 1-800-635-7943
- Fax line 1-800-565-7757

Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner. To this end, Statistics Canada has developed standards of service that its employees observe. To obtain a copy of these service standards, please contact Statistics Canada toll-free at 1-800-263-1136. The service standards are also published on www.statcan.gc.ca under "Contact us" > "Standards of service to the public."

Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued co-operation and goodwill.

Published by authority of the Minister responsible for Statistics Canada

© Her Majesty the Queen in Right of Canada as represented by the Minister of Industry, 2018

All rights reserved. Use of this publication is governed by the Statistics Canada Open Licence Agreement.

An HTML version **is also available.**

Cette publication est aussi disponible en français.

Notice to readers

Population by age and sex will be available on December 13, 2018.

Estimates released in this publication are based on the 2016 Census counts adjusted for census net undercoverage (CNU) and incompletely enumerated Indian reserves (IEIR) to which is added the estimated demographic growth for the period going from May 10, 2016 to the date of the estimate.

These estimates are not to be mistaken with the 2016 Census counts.

Population estimates by age and sex based on the 2016 Census counts, adjusted for CNU and IEIR, will be available on December 13, 2018.

The analysis in this publication is based on preliminary data. These data will be revised over the coming years, and it is possible that some trends described in this publication will change as a result of these revisions. Therefore, this publication should be interpreted with caution.

Most of the components, used to produce preliminary population estimates, are estimated using demographic models or based on data sources less complete or reliable, albeit more timely, than those used for updated or final estimates.

Acknowledgements

The completion of this publication and the dissemination of the annual demographic estimates rests on the assiduous and meticulous work of the members of the Population Estimates Section of the Demography Division.

The contribution of editorial, communications, translation and dissemination services staff of Statistics Canada was essential to the project's achievement and is appreciated.

Table of contents

Highlights 6

Analysis: Total population 7

Methodology 20

Quality of demographic data 27

Explanatory notes for the tables 37

Appendix A – Glossary 38

Appendix B – Sources and remarks 41

Related products 43

Charts and Figures

Chart 1.1 Population growth rate, 1997/1998 to 2017/2018, Canada 7

Chart 1.2 Population growth rate, most recent annual period available,G7 countries 8

Chart 1.3 Factors of population growth, 1997/1998 to 2017/2018, Canada 9

Chart 1.4 Population distribution by province or territory, July 1, 2018 10

Chart 1.5 Population growth rate, 2016/2017 and 2017/2018, Canada, provinces and territories 11

Chart 1.6 Factors of population growth, 2017/2018, Canada, provinces and territories 12

Chart 1.7 New immigrants distribution by province or territory, 1997/1998 to 2017/2018 13

Chart 1.8 Interprovincial migration by province or territory, 2017/2018 14

Chart 1.9 Largest interprovincial migration flows, by province or territory of origin and destination, 2017/2018 15

Chart 1.10 Intercensal demographic growth rate, 2006 to 2011 and 2011 to 2016, Canada, provinces and territories 16

Statistical tables

Table 1.1-1 Annual population estimates, July 1, Canada, provinces and territories - Population 18

Table 1.1-2 Annual population estimates, July 1, Canada, provinces and territories - Total growth rates 18

Table 1.1-3 Annual population estimates, July 1, Canada, provinces and territories - Total growth 18

Table 1.2 Annual population estimates and factors of demographic growth - Canada 18

Table 1.3 Annual estimates of components of demographic growth - Canada 19

Table 1.4 Annual estimates of interprovincial migrants by province or territory of origin and destination, Canada, July 1, 2017 to June 30, 2018 19

Highlights

Total population

- On July 1, 2018, Canada's population was estimated at 37,058,856, up 518,588 in the past year (2017/2018).
- An increase of this magnitude has not been seen since 1956/1957 (+529,200), a period characterized by the height of the baby boom and an influx of several thousand Hungarian immigrants.
- Canada's population growth rate of 1.4% last year was the highest since the early 1990s.
- In 2017/2018, Canada's population growth remained the highest among all G7 countries.
- Last year, Canada's international migratory increase was the highest ever recorded (+412,747), surpassing the peak of 320,750 set in 2016/2017.
- The high number of both immigrants (+303,257) and net non-permanent residents[1] (+165,729) was largely behind the rapid increase in Canada's population.
- In 2017/2018, international migratory increase accounted for more than three-quarters (79.6%) of Canada's population growth. This proportion has been increasing almost steadily since the early 1990s (44.3% on average).
- In 2017/2018, the population growth rate was highest in Nunavut (+2.2%) and lowest in the Northwest Territories (-0.9%).
- For the first time since 2000/2001, Ontario had the highest population growth rate of all provinces (+1.8%), tied with Prince Edward Island.
- Compared with the previous year, the population growth rate in 2017/2018 rose in the country's four most populous provinces—Ontario, Quebec, British Columbia and Alberta—as well as in Nova Scotia.
- Following two years of losses, Alberta started to post interprovincial migration gains again (+1,438). Ontario posted positive interprovincial migratory increase (+17,886) for a third consecutive year.

1. The number of net non-permanent residents is calculated by subtracting the number of non-permanent residents estimated at the beginning of the period from the number estimated at the end of the period. There are three main categories of non-permanent residents: work permit holders, study permit holders and refugee claimants.

Analysis: Total population

For the first time, the estimates in this publication are based on the 2016 Census counts adjusted for census net undercoverage and incompletely enumerated Indian reserves, to which is added the estimated population growth for the period from May 10, 2016 to the date of the estimate. The data starting from July 2001 were also revised.

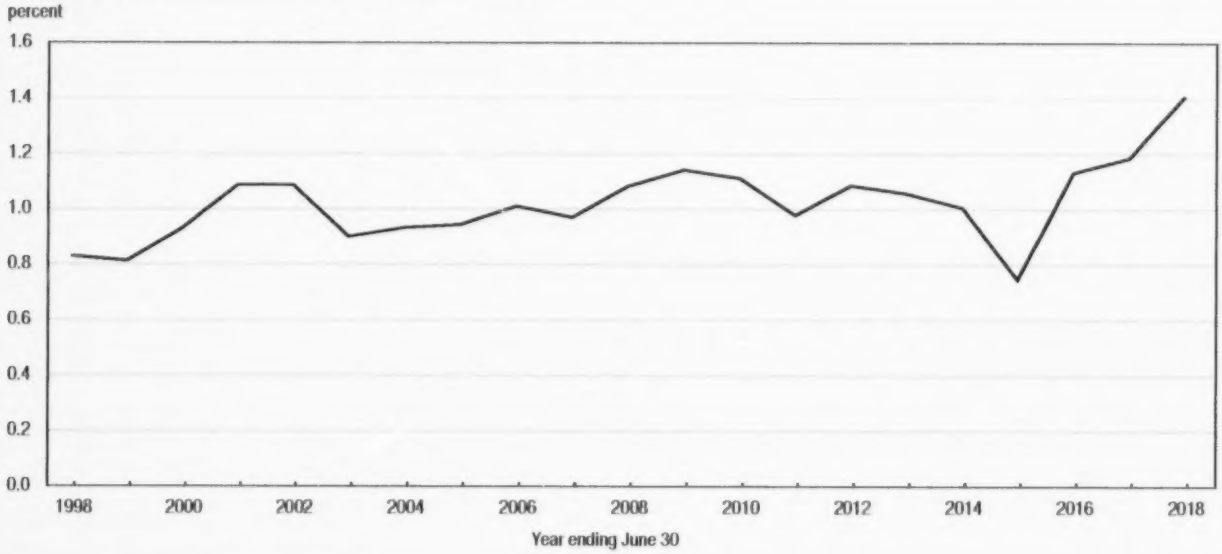
The analysis in this publication is based on preliminary data. These data will be revised over the coming years, and it is possible that some trends described in this publication will change as a result of these revisions. Therefore, this publication should be interpreted with caution.

This section presents the population estimates for Canada, the provinces and the territories on July 1, 2018, along with a concise analysis of the various components of population growth for 2017/2018. These estimates now being based on the 2016 Census, the section ends with a brief analysis of the impact of the base change and the intercensal increases observed in recent cycles (see the box "Rebasing (2016)").

The population of Canada continues to grow at a steady pace

On July 1, 2018, Canada's population was estimated at 37,058,856, up 518,588 from July 1, 2017. The country's population growth rate was 1.4%,[2] a level not seen since 1989/1990 (1.5%). In absolute numbers, Canada's population growth in the past year (+518,588) reached a high not seen since 1956/1957, a period when the annual number of births was among the highest ever, the country being at the height of the baby boom, and at a time when many Hungarian refugees[3] arrived in the country.

Chart 1.1
Population growth rate, 1997/1998 to 2017/2018, Canada



Source: Source: Statistics Canada, Demography Division.

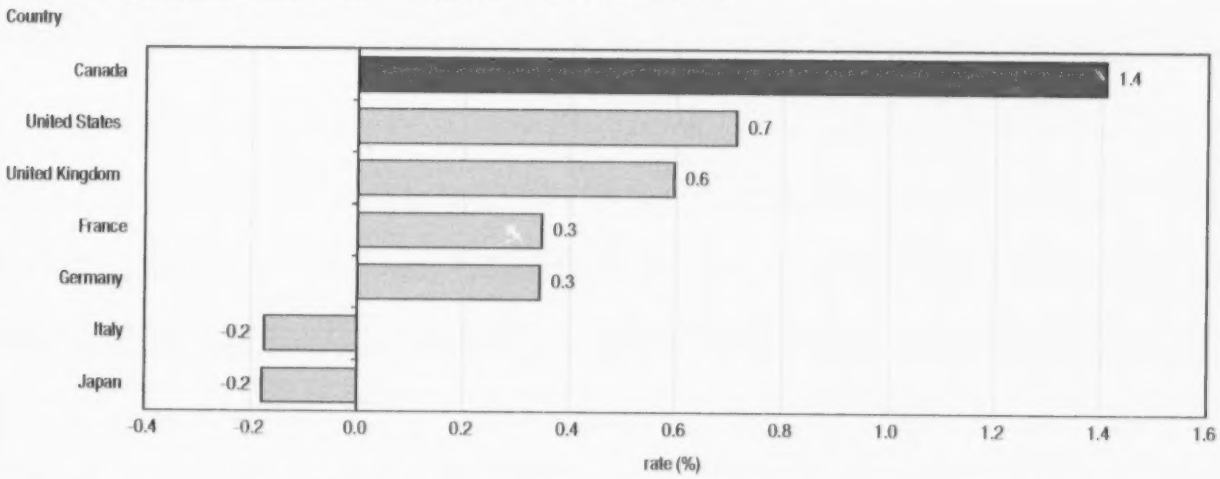
2. Population growth rates are calculated using the average population at the beginning and end of the period as a denominator.
3. A popular revolution took place in Hungary in 1956, during which the Soviet Union invaded the country.

Canada posts the strongest population growth of the G7 countries

During the past year, the country's population growth remained the highest among all G7 countries. Canada's population growth rate was twice that of the second-place country, the United States (+0.7%). Canada's population growth rate was also two to four times higher than the rates of all the other G7 countries that posted an increase: the United Kingdom (+0.6%), France and Germany (+0.3% each). Lastly, it contrasts with the population decreases observed in Italy and Japan (-0.2% each).

However, Canada's population growth was not the highest among industrialized countries; it was slightly lower than the increases observed in Australia (+1.6%) and New Zealand (+1.9%), for example.[4]

Chart 1.2
Population growth rate, most recent annual period available,[1] G7 countries



1. For Canada, the most recent annual period available extends from July 1, 2017 to July 1, 2018. For Italy and France, the most recent annual period available extends from January 1, 2017 to January 1, 2018. For Japan, the most recent period available extends from October 1, 2016 to October 1, 2017. For the United States and the United Kingdom, the most recent period available extends from July 1, 2016 to July 1, 2017. For Germany, the most recent annual period available extends from September 30, 2016 to September 30, 2017.
Sources: Statistics Canada, Federal Statistical Office of Germany, Office for National Statistics (United Kingdom), U.S. Census Bureau, National Institute of Statistics and Economic Studies (France), Italian National Institute of Statistics, Statistics Bureau of Japan.

International migration accounts for most of the population growth

Population growth at the national level is based on two factors: natural increase[5] and international migratory increase,[6] while provincial and territorial population estimates also factor in interprovincial migration.

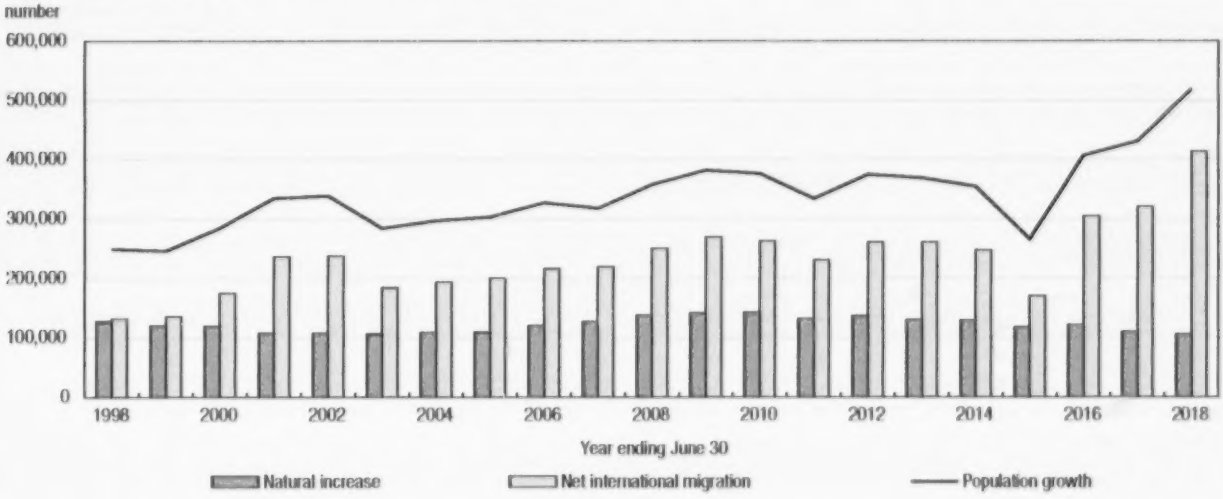
Between July 1, 2017, and July 1, 2018, international migratory increase was 412,747, the highest level ever recorded, widely surpassing (by over 90,000 individuals) the peak of 320,750 recorded last year.

Since 1995/1996, international migration has consistently been the main driver of population growth in Canada. In the past year, more than three-quarters of the population growth stemmed from international migratory increase (79.6%), a never-before-seen level. By comparison, international migratory increase accounted for, on average less than half (44.3%) of the population growth in the early 1990s.

4. Sources: Federal Statistical Office of Germany, Office for National Statistics (United Kingdom), Census Bureau (United States), National Institute of Statistics and Economic Studies (France), National Institute of Statistics (Italy), Statistics Bureau of Japan, Australian Bureau of Statistics, Statistics New Zealand and calculations performed by the author. The reference periods vary by country: July 1, 2017, to July 1, 2018 (Canada); June 30, 2017, to June 30, 2018 (New Zealand); January 1, 2017, to January 1, 2018 (Italy, France); December 31, 2016, to December 31, 2017 (Australia); October 1, 2016, to October 1, 2017 (Japan); September 30, 2016, to September 30, 2017 (Germany); July 1, 2016, to July 1, 2017 (United States, United Kingdom).
5. Natural increase is the difference between the numbers of births and deaths.
6. International migratory increase basically refers to the total number of moves between Canada and abroad that result in a change in the usual place of residence. It is calculated by adding immigration, return emigration and net non-permanent residents, then subtracting emigration and net temporary emigration.

In the past year, natural increase totalled 105,841 persons, the lowest level recorded in Canada,[7] on account of the growing number of deaths due essentially to population aging. Specifically, natural increase in 2017/2018 was the difference between 385,777 births and 279,936 deaths based on preliminary estimates.

Chart 1.3
Factors of population growth, 1997/1998 to 2017/2018, Canada



Note: Until 2016 inclusively, population growth is not equal to the sum of natural increase and international migratory increase because residual deviation must also be considered in the calculation.
Source: Statistics Canada, Demography Division.

International migratory increase peaks in several provinces and territories

Since the beginning of the period covered by the current demographic accounting system (July 1971), never-before-seen levels of international migratory increase were observed in Nova Scotia (+7,419), Quebec (+82,943), Ontario (+192,679), British Columbia (+55,457) and Yukon (+429). International migration was also high in the other provinces.

Last year's unprecedented level of international migration is the result of strong immigration levels and the arrival of a significant number of non-permanent residents. Canada welcomed 303,257 immigrants last year, the second-highest number observed during the study period from 1971 to 2018.[8] The highest number was recorded in 2015/2016 (323,192 immigrants), when Canada welcomed many Syrian refugees.

Meanwhile, the number of non-permanent residents increased by 165,729 during the past year, compared with a gain of 103,597 in 2016/2017. This is the highest increase during the study period from 1971 to 2018, exceeding the peak of 140,748 non-permanent residents in 1988/1989, when the Immigration and Refugee Board of Canada was created and a new refugee determination system introduced. Last year was marked by a considerable increase (46.7%) in the number of refugee claimants, compared with a 14.3% increase in work permit holders and an 18.6% rise in study permit holders. However, individuals who claimed refugee status represented 21.3% of the increase in the number of non-permanent residents in 2017/2018, as opposed to 40.0% for work permit holders and 39.0% for study permit holders.[9]

Various factors can affect international migration variations and trends. For example, Immigration, Refugees and Citizenship Canada (IRCC) is regularly called on to revise the brackets for immigration levels, in keeping with the

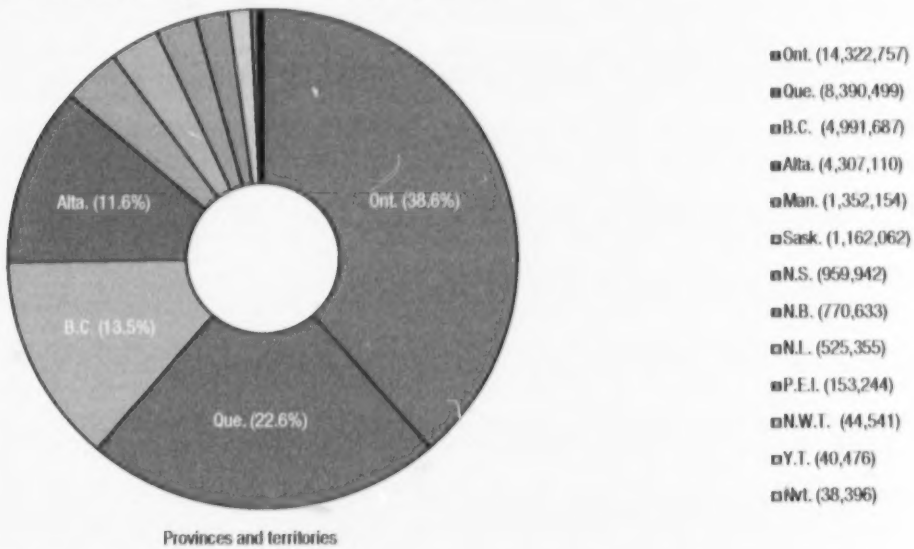
7. Based on historical data dating back to 1921/1922.
8. The period covered by the current demographic accounting system began in July 1971.
9. Calculations by the author. For the estimate exercise, IRCC data expressed in permits or claims are transformed into holders or seekers.

framework set out in the *Immigration and Refugee Protection Act*.[10] The recent rise in the number of immigrants is consistent with the levels established by the IRCC.[11] In addition, the number of non-permanent residents can fluctuate based on the economic and political climate in Canada and elsewhere in the world. There are three main categories of non-permanent residents: work permit holders, study permit holders, and refugee claimants. The number of work and study permit holders can rise or fall based on the economic context of the country of origin and the host country, as on the directions of certain programs in Canada and in the provinces and territories. Meanwhile, the number of refugee claimants can vary based on the political context in their country of origin and on decisions made in Canada. Emigration trends are more closely linked to both the internal and external economic situation.

More than four out of five Canadians live in four provinces

On July 1, 2018, more than 32 million Canadians (86.4%) were living in one of four provinces: Ontario (38.6%), Quebec (22.6%), British Columbia (13.5%) or Alberta (11.6%). Ontario remains the country's most populated province, with 14,322,757 inhabitants. Quebec is the second most populous province (8,390,499), followed by British Columbia (4,991,687) and Alberta (4,307,110).

Chart 1.4
Population distribution by province or territory, July 1, 2018



Source: Statistics Canada, Demography Division.

Population growth accelerates in Alberta again and picks up in the three most populous provinces

In Alberta, population growth rebounded in 2017/2018, following a four-year slowdown. The province recorded a population growth of 1.5% in 2017/2018, compared with 1.1% the previous year.

The situation was different in Ontario, which recorded a population growth rate of 1.8% in 2017/2018, the highest rate it has seen in 28 years. In addition, for the first time since 1988/1989, Ontario's population growth rate exceeded Alberta's for the second consecutive year. This reversal is partly due to Ontario's transition to positive

10. The Immigration and Refugee Protection Act defines three main categories of admission for immigrants to Canada: economic, family reunification and refugees. In addition to these three categories, there is another—other immigrants—which includes, for example, other humanitarian cases, although very few immigrants are admitted in this category.
11. The IRCC uses the calendar year (January 1 to December 31) when setting immigration levels. However, annual population estimates are presented by censal year (July 1 to June 30).

interprovincial migration and Alberta's negative or low interprovincial migration for the past three years. In addition, international migration accelerated in Ontario in the past two years, but slowed in Alberta.

The last time Quebec experienced a higher population growth rate than last year's rate (1.1%) was in 1988/1989 (+1.3%), due to higher international migration than at that time.

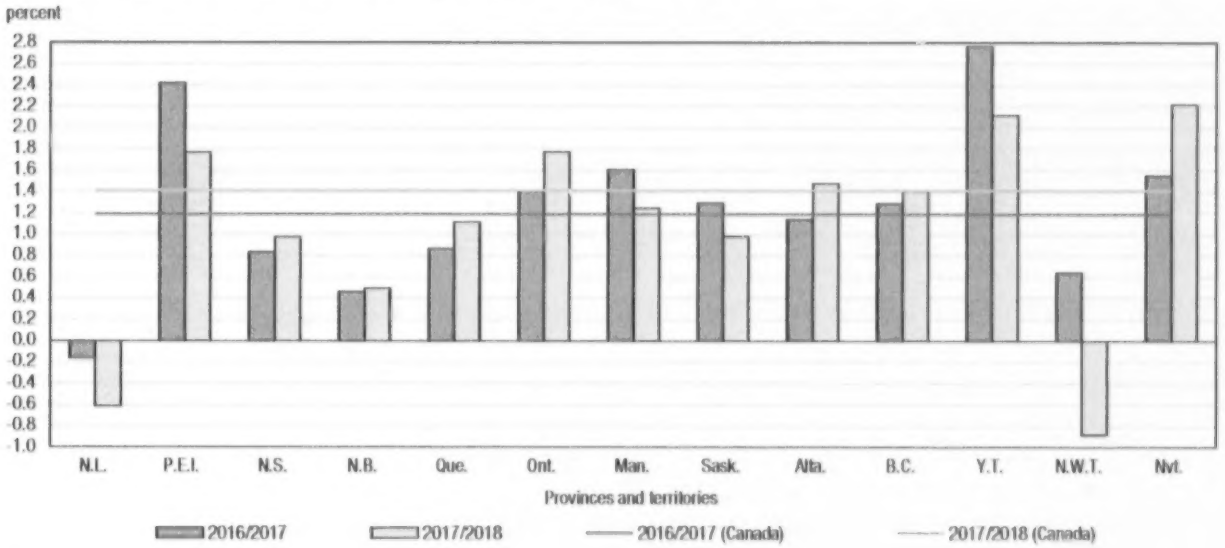
In Saskatchewan (+1.0%), population growth in 2017/2018 was among the two lowest in the last 12 years, mainly due to larger interprovincial migration losses. The portrait was similar in Manitoba (+1.2%), except that stronger international migration reduced the impact of interprovincial migratory losses.

Moreover, British Columbia's population growth rate (+1.4%) in 2017/2018 was among the lowest in the last seven years, mostly due to smaller interprovincial gains.

According to preliminary population estimates, Newfoundland and Labrador (-0.6%) was the only province to see its population decline last year, for a second consecutive year. This increase followed six years of growth below 1%. In the other Atlantic provinces, population growth remained positive and above the average for the past 10 years, at 1.8% in Prince Edward Island, 1.0% in Nova Scotia, and 0.5% in New Brunswick. In particular, international migration was higher in 2017/2018, and Nova Scotia recorded interprovincial migration gains, while it was often negative in recent years.

Finally, in the territories, Nunavut (+2.2%) had the highest population growth rate in Canada, followed closely by Yukon (+2.1%). In the case of Nunavut, high fertility explains the strong growth, while Yukon recorded a peak in terms of international migration. In contrast, the Northwest Territories saw its population decrease by 0.9% in 2017/2018, mostly due to strong interprovincial migratory losses.

Chart 1.5
Population growth rate, 2016/2017 and 2017/2018, Canada, provinces and territories



Source: Statistics Canada, Demography Division.

International migratory increase is the main driver of population growth in all provinces

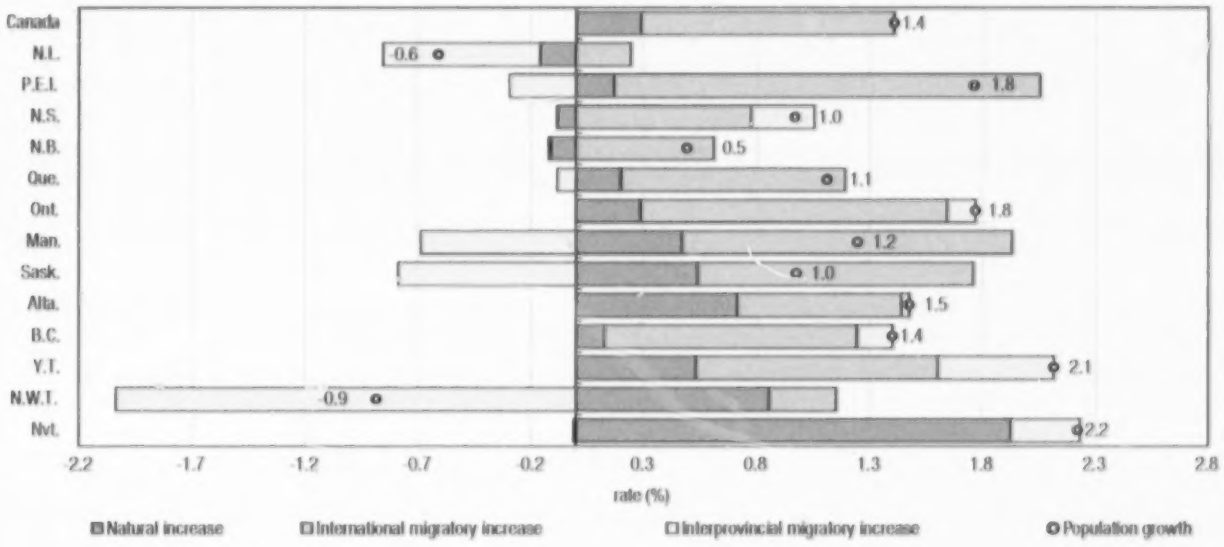
Preliminary population estimates indicate that there were more deaths than births in all the Atlantic provinces, except Prince Edward Island. As a result, international migratory increase was the sole source of population growth in New Brunswick and the main contributor in Nova Scotia, since this province also saw gains in interprovincial migration. In Newfoundland and Labrador, international migratory increase (+0.2%) was not enough to offset the decline from natural decrease (-0.2%) and interprovincial migration losses (-0.7%).

Ontario, Alberta and British Columbia were the only provinces where each of the three growth factors contributed positively to population growth. Moreover, international migratory increase was the main driver of population growth in Ontario and British Columbia. In Alberta, natural increase and international migratory increase contributed equally to the province's population growth.

Quebec, Manitoba and Saskatchewan owed a large portion of their population growth to international migration, and to a lesser extent natural increase. However, these provinces recorded losses in interprovincial migration.

In the territories, natural increase was a greater source of population growth due to higher fertility levels. Natural increase in Nunavut (+1.9%)—the highest in Canada—was behind most of this territory's population growth. In the Northwest Territories, strong natural increase (+0.9%) and positive international migratory increase (+0.3%) were offset by a considerable decrease in interprovincial migration (-2.0%). Yukon was the only territory to post higher international migratory increase (+1.1%) than natural increase (+0.5%).

Chart 1.6
Factors of population growth, 2017/2018, Canada, provinces and territories



Source: Statistics Canada, Demography Division.

A growing share of immigrants settle in Ontario

Ontario attracted 43.7% of new immigrants in 2017/2018, following a period of stagnation at around 37% in the three previous years to the benefit of the Prairie provinces. In the past year, 22.4% of immigrants settled in one of the three Prairie provinces, down from 27.2% in the previous period. However, this proportion was nearly three times higher than 20 years ago (8.4% in 1997/1998). The share of new immigrants settling in Quebec in 2017/2018 fell to 15.8%, compared with 19.5% in 2016/2017.

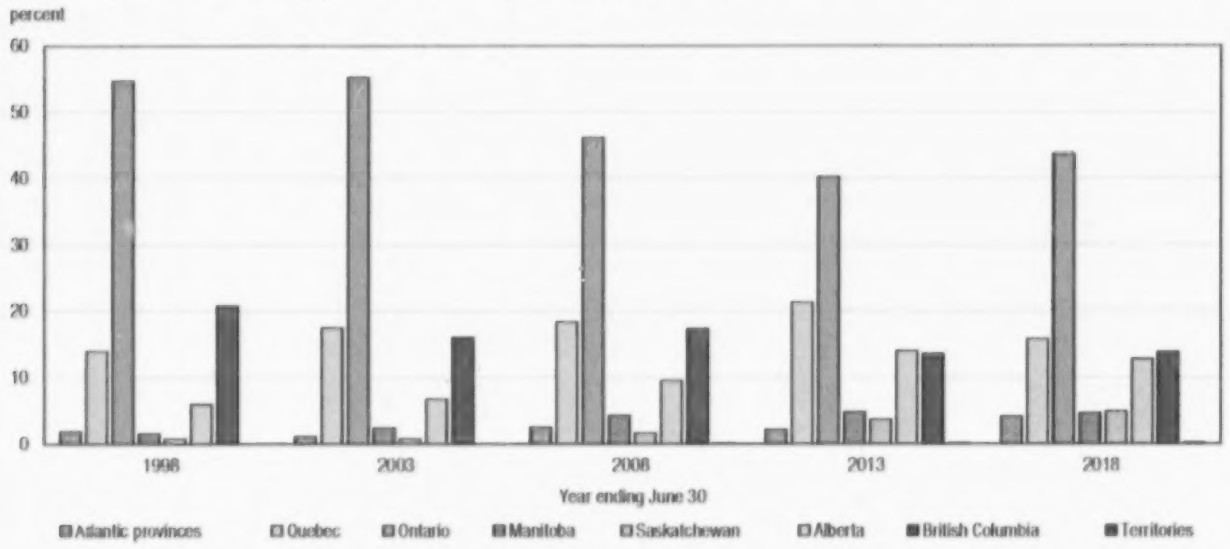
> The estimated number of immigrants by province and territory is based on their intended province or territory of residence, as collected by the IRCC. This also applies to the calculation of international migratory increase and provincial and territorial population growth.

In the past year, the proportion of immigrants received by Ontario (43.7%) largely exceeded its demographic weight (38.6%). This was also the case for each western province, as well as Prince Edward Island, though the

gap was narrower. The proportion of immigrants who settled in the Atlantic provinces (4.2%) remained practically unchanged from the previous period (4.1%). Nevertheless, it is twice as high as 20 years ago (2.0% in 1997/1998).

With the exception of Saskatchewan, Alberta and Newfoundland and Labrador, all provinces saw their number of non-permanent residents increase at an unprecedented rate in 2017/2018. Among others, Quebec showed a gain of 43,989 non-permanent residents, a peak all years combined. Ontario also recorded one of the highest increases in non-permanent residents (+85,695). It was the same in British Columbia, with a net gain of 25,474 non-permanent residents. Atlantic provinces (except Newfoundland and Labrador), Manitoba and Yukon have also recorded a peak number of non-permanent residents.

Chart 1.7
New immigrants distribution by province or territory, 1997/1998 to 2017/2018



Source: Statistics Canada, Demography Division.

Alberta posts interprovincial migration gains following two years of losses

At the provincial and territorial level, population growth is also the result of internal migration exchanges. Alberta saw interprovincial migration gains (+1,438) in 2017/2018, following two years of losses. Specifically, after posting the highest interprovincial migration gains for five consecutive years, from 2010/2011 to 2014/2015, Alberta saw the biggest losses in 2015/2016 (-15,108) and 2016/2017 (-15,559).

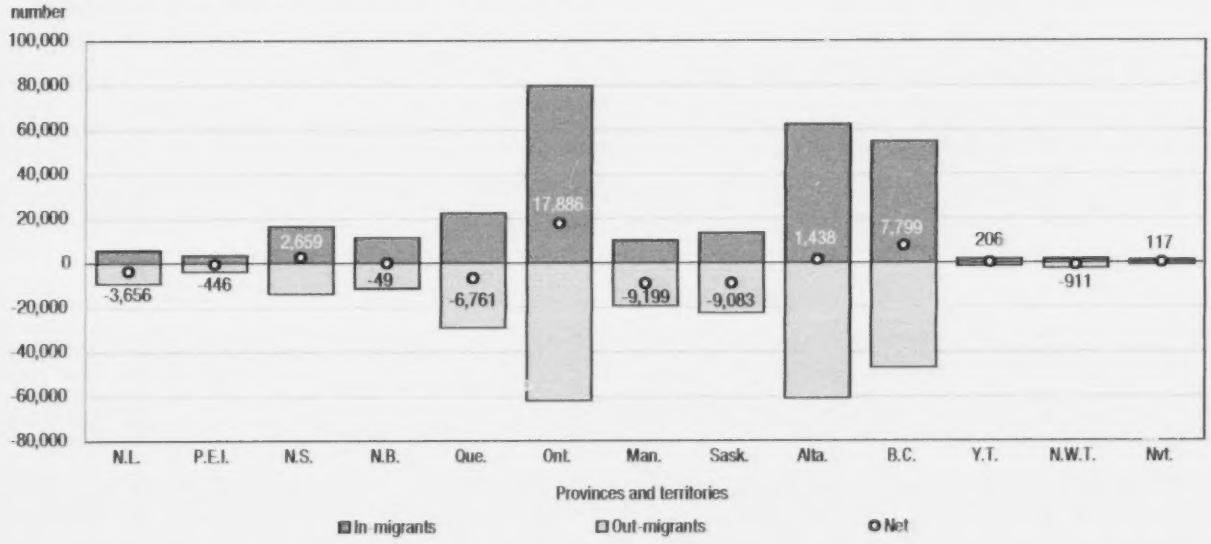
The positive migratory growth in Alberta was due to more people staying in the province and to the province attracting more residents. Interprovincial migration gains in Alberta were the result of more in migrants (up 12,090 compared with 2016/2017) and fewer out migrants (down 4,907 compared with 2016/2017).

For a fifth straight year, Saskatchewan posted interprovincial migration losses. Moreover, interprovincial migration losses have continued in Manitoba since 1984/85. In contrast, Ontario (+17,886) and British Columbia (+7,799) had the strongest interprovincial migration gains in 2017/2018. Ontario's interprovincial migratory increase in 2017/2018 reached its highest level since 2000/2001 (+18,623).

Elsewhere in Canada, Nova Scotia posted positive interprovincial migratory increase (+2,659) for a third straight year, while slight migration losses were once again recorded in New Brunswick (-49) following a pause last year. Manitoba (-9,199) and Saskatchewan (-9,083) saw the biggest interprovincial migration losses since 1989/1990 in the case of Manitoba, and since 2004/2005 for Saskatchewan.

Population growth and economic growth are often related. For example, internal migratory flows can be either a cause or a consequence of the economic situation, including variations in employment, unemployment or the price of certain raw materials. Therefore, the fact that more individuals moved to Alberta than left could be related to once-again favourable economic conditions in the province. Employment grew by 39,600 between July 2017 and July 2018, while the unemployment rate dropped 1.1 percentage points to 6.7% in July 2018.[12] Similarly, Alberta's interprovincial migration losses in 2015/2016 and 2016/2017 could have been related to a decline in economic activity in the province at the time. In 2016, Alberta posted the highest unemployment rate ever seen in 20 years, as well as job and wage losses in most industries.[13] In contrast, interprovincial migration gains in Ontario occurred at the same time as the province posted the highest increase in employment in 2017 in the entire country, with a gain of 128,400 employed people, mostly full-time workers.[14]

Chart 1.8
Interprovincial migration by province or territory, 2017/2018



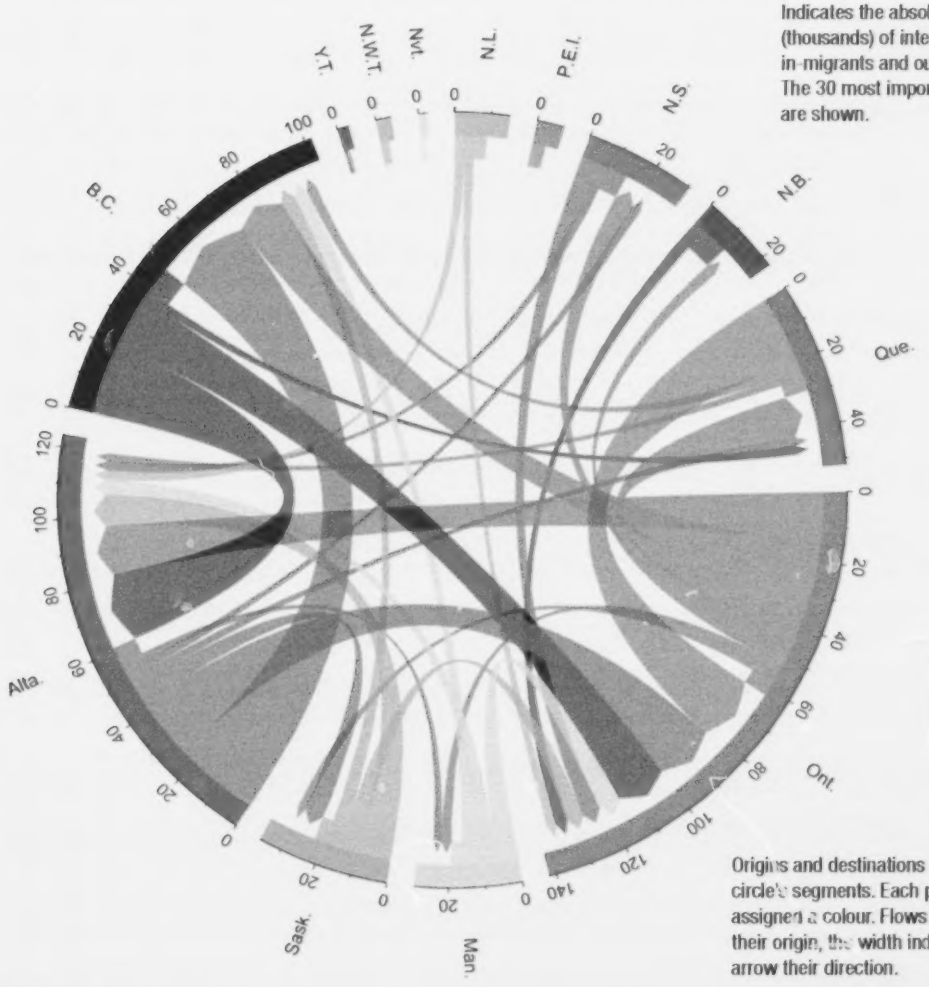
Source: Statistics Canada, Demography Division.

The largest migration flows involve exchanges between Ontario, Alberta and British Columbia

The 30 largest migration flows are shown in the circular chart[15] below, in which each province or territory is assigned a colour. Migration origins and destinations are represented by the circle's segments. Flows are the same colour as their origin, the width indicates their size and the arrow their direction.

12. Statistics Canada. 2018. The Daily (2018-08-10), Labour Force Survey, July 2018 (https://www150.statcan.gc.ca/n1/daily-quotidien/180810/dq180810a-eng.htm).
13. Bourbeau, Emmanuelle and Andrew Fields. 2017. "Annual review of the labour market, 2016." Labour Statistics: Research Papers. Statistics Canada Catalogue no. 75-004-X (https://www150.statcan.gc.ca/n1/pub/75-004-m/75-004-m2017001-eng.htm).
14. Fields, Andrew, Emmanuelle Bourbeau and Martha Patterson. 2018. "Annual review of the labour market, 2017." Labour Statistics: Research Papers. Statistics Canada Catalogue no. 75-004-M (https://www150.statcan.gc.ca/n1/pub/75-004-m/75-004-m2018001-eng.htm)
15. For more information about the sources used for this chart and its interpretation, readers are encouraged to read the following articles published by the Vienna Institute of Demography: Sander et al. 2014. "Visualising Migration Flow Data" (http://www.global-migration.info/VID_WP_Visualising_Migration_Flow_Data_with_Circular_Plots.pdf); and Abel. 2015. "Estimates of Global Bilateral Migration Flows by Gender Between 1960 and 2010" (http://www.oeaw.ac.at/fileadmin/subsites/Institute/VID/PDF/Publications/Working_Papers/WP2015_05.pdf).

Chart 1.9
Largest interprovincial migration flows, by province or territory of origin and destination, 2017/2018


Indicates the absolute number (thousands) of interprovincial in-migrants and out-migrants. The 30 most important flows are shown.
Y.T.
N.W.T.
Nvt.
N.L.
P.E.I.
N.S.
N.B.
Que.
Ont.
Man.
Sask.
Alta.
B.C.
Origins and destinations are represented by the circle's segments. Each province or territory is assigned a colour. Flows have the same colour as their origin, the width indicates their size and the arrow their direction.

Source: Statistics Canada, Demography Division

Over the past year, the largest interprovincial migration flow was from Alberta to British Columbia (24,453 migrants). The flow in the other direction, i.e., from British Columbia to Alberta, involved 20,904 migrants and was the second largest interprovincial migration flow. When taken into account, these exchanges between the two provinces result in a gain of 3,549 for British Columbia. These net gains in British Columbia, at the expense of Alberta, were also three times lower than last year (+10,774). This in part explains net gains in British Columbia two and a half times lower (+7,799) than in 2016/2017 (+18,834), all provinces of origin combined.

Since fewer Albertans left the province for British Columbia in 2017/2018, and more people left Saskatchewan, Manitoba and Newfoundland and Labrador for Alberta in 2017/2018 (+7,857) compared with 2016/2017 (+2,542), a net interprovincial gain was recorded in Alberta.

The third largest interprovincial migration flow in Canada came from Quebec to Ontario (19,814). The size of this flow is primarily due to their proximity and the demographic weight of these provinces—as the two most populous.

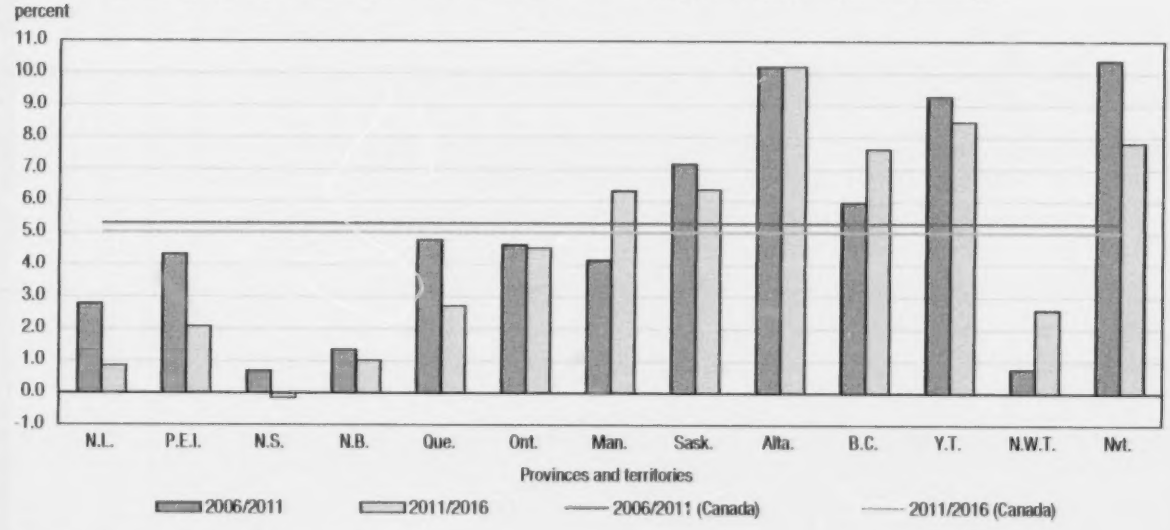
In relative terms expressed as rates,[16] the largest interprovincial migration flows among provinces were from Prince Edward Island to Ontario (+1.1%), from Saskatchewan to Alberta (+0.9%), from Newfoundland and Labrador to Alberta, from Alberta to British Columbia and from Nova Scotia to Ontario (+0.6% each).

Rebasing (2016)

The estimates released in this publication are now based on the 2016 Census adjusted for census net undercoverage and partially enumerated Indian reserves. Population estimates between July 1, 2011 and April 1, 2016 have become intercensal. In consequences, the 2016 error of closure was estimated at 110,310, for an error of closure of 0.31%. This error is relatively higher than the level recorded in 2006 (0.10%) and relatively lower than the 2011 error of closure (0.42%).[17]

The error of closure is a measure of accuracy of the postcensal estimates. It is defined as the difference between the final postcensal estimate on Census day and the census population adjusted for coverage. The error of closure comes from three sources: errors primarily due to sampling when measuring the starting and end of period censuses coverage and errors related to the components of population growth over the intercensal period.

Chart 1.10
Intercensal demographic growth rate, 2006 to 2011 and 2011 to 2016, Canada, provinces and territories



Source: Source: Statistics Canada, Demography Division.

Intercensal growth

On July 1, 2016, the estimated population of Canada based on the 2016 Census was 36,109,487. At the national level, intercensal population growth between the 2011 and 2016 censuses was 5.0%, or 1.8 million people. This growth was similar compared to the level observed in the previous intercensal period 2006 to 2011 with 5.3%. Between 2011 and 2016, net international migration accounted for two-thirds of Canada's population growth.

16. Not shown in Chart 1.9. These rates are based on the average of the start-of-period and end-of-period populations of the province of origin.
17. Postcensal estimates at the date of the 2006 and 2011 censuses were revised in September 2018. Previously, the error of closure was 0.14% and 0.50% respectively.

Between 2011 and 2016, Canada's population growth rate (+5.0%) was the highest among the G7[18] countries, including the United States (+3.7%), the United Kingdom (+3.7%), France (+2.7%), Germany (+2.6%), Italy (+2.2%) and Japan (-0.7%). Among industrialized countries, Canada's current population growth fell below the estimated rates for countries such as Australia (+7.7%) and New Zealand (+6.9%).[19]

In general, population growth in the provinces and territories between 2011 and 2016 was lower than or equal to the level observed in the period between 2006 and 2011, except in Manitoba, British Columbia and the Northwest Territories. In addition, the population in every province and territory increased between 2011 and 2016, with the exception of Nova Scotia. In comparison, all provinces and territories saw an increase in their population between 2006 and 2011.

For the 2011 to 2016 intercensal period, population growth was low in the Atlantic provinces, but high in the Western provinces and most of the territories. Compared with the national rate (+5.0%), growth was stronger in Alberta (+10.2%), Yukon (+8.5%), Nunavut (+7.8%), British Columbia (+7.6%), Saskatchewan (+6.4%) and Manitoba (+6.3%). By contrast, the population grew less rapidly in other provinces and territories.

18. The Group of Seven (G7) is an informal grouping of seven of the world's advanced economies consisting of the United States, Japan, Germany, France, the United Kingdom, Italy and Canada.
19. Sources: Federal Statistical Office of Germany, Office for National Statistics (United Kingdom), Census Bureau (United States), National Institute of Statistics and Economic Studies (France), National Institute of Statistics (Italy), Statistics Bureau of Japan, Australian Bureau of Statistics, Statistics New Zealand and calculations performed by the author. The reference periods vary by country: January 1, 2011, to January 1, 2016 (Italy, France), June 30, 2011, to June 30, 2016 (New Zealand, Germany), July 1, 2011, to July 1 2016 (Canada, United States, United Kingdom), September 30, 2011, to September 30, 2016 (Australia), October 1 2011, to October 1, 2016 (Japan).

Table 1.1-1
Annual population estimates, July 1, Canada, provinces and territories - Population

	Canada	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
	number													
2011	34,339,328	524,999	143,963	944,274	755,705	8,005,090	13,261,381	1,233,649	1,066,026	3,789,030	4,502,104	35,411	43,504	34,192
2012	34,714,222	526,345	144,530	943,635	758,378	8,061,101	13,390,632	1,249,975	1,083,755	3,874,548	4,566,769	36,234	43,648	34,672
2013	35,082,954	527,114	144,094	940,434	758,544	8,110,880	13,510,781	1,264,620	1,099,736	3,981,011	4,630,077	36,521	43,805	35,337
2014	35,437,435	528,159	144,283	938,545	758,976	8,150,183	13,617,553	1,279,014	1,112,979	4,083,648	4,707,103	37,137	43,884	35,971
2015	35,702,908	528,117	144,546	936,525	758,842	8,175,272	13,707,118	1,292,227	1,120,967	4,144,491	4,776,388	37,690	44,237	36,488
2016	36,109,487	529,426	146,969	942,790	763,350	8,225,950	13,875,394	1,314,139	1,135,987	4,196,061	4,859,250	38,547	44,649	36,975
2017	36,540,268	528,567	150,566	950,680	766,852	8,297,717	14,071,445	1,335,396	1,150,782	4,243,995	4,922,152	39,628	44,936	37,552
2018	37,058,856	525,355	153,244	959,942	770,633	8,390,499	14,322,757	1,352,154	1,162,062	4,307,110	4,991,687	40,476	44,541	38,396

Note: Estimates are final intercensal up to 2015, final postcensal for 2016, updated postcensal for 2017 and preliminary postcensal for 2018.
Source: Statistics Canada, Demography Division.

Table 1.1-2
Annual population estimates, July 1, Canada, provinces and territories - Total growth rates

	Canada	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
	rates per 1,000													
2011/2012	10.86	2.56	3.93	-0.68	3.53	6.97	9.70	13.15	16.49	22.32	14.26	22.97	3.30	13.94
2012/2013	10.57	1.46	-3.02	-3.40	0.22	6.16	8.93	11.65	14.64	27.11	13.77	7.89	3.59	19.00
2013/2014	10.05	1.98	1.31	-2.01	0.57	4.83	7.87	11.32	11.97	25.45	16.50	16.73	1.80	17.78
2014/2015	7.46	-0.08	1.82	-2.15	-0.18	3.07	6.56	10.28	7.15	14.79	14.61	14.78	8.01	14.27
2015/2016	11.32	2.48	16.62	6.67	5.92	6.18	12.20	16.81	13.31	12.37	17.20	22.48	9.27	13.26
2016/2017	11.86	-1.62	24.18	8.33	4.58	8.69	14.03	16.05	12.94	11.36	12.86	27.66	6.41	15.48
2017/2018	14.09	-6.10	17.63	9.70	4.92	11.12	17.70	12.47	9.75	14.76	14.03	21.17	-8.83	22.23

Note: Total growth is final up to 2015/2016, updated for 2016/2017 and preliminary for 2017/2018.
Source: Statistics Canada, Demography Division.

Table 1.1-3
Annual population estimates, July 1, Canada, provinces and territories - Total growth

	Canada	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
	number													
2011/2012	374,894	1,346	567	-639	2,673	56,011	129,251	16,326	17,729	85,518	64,665	823	144	480
2012/2013	368,732	769	-436	-3,201	166	49,779	120,149	14,645	15,981	106,463	63,308	287	157	665
2013/2014	354,481	1,045	189	-1,889	432	39,303	106,772	14,394	13,243	102,637	77,026	616	79	634
2014/2015	265,473	-42	263	-2,020	-134	25,089	89,565	13,213	7,988	60,843	69,285	553	353	517
2015/2016	406,579	1,309	2,423	6,265	4,508	50,678	168,276	21,912	15,020	51,570	82,862	857	412	487
2016/2017	430,781	-859	3,597	7,890	3,502	71,767	196,051	21,257	14,795	47,934	62,902	1,081	287	577
2017/2018	518,588	-3,212	2,678	9,262	3,781	92,782	251,312	16,758	11,280	63,115	69,535	848	-395	844

Note: Total growth is final up to 2015/2016, updated for 2016/2017 and preliminary for 2017/2018.
Source: Statistics Canada, Demography Division.

Table 1.2
Annual population estimates and factors of demographic growth - Canada

	Population at beginning period	Natural increase	Net interprovincial migration	Net international migration	Total net migration	Residual deviation	Total growth	Population growth rate
	number							per 1,000
2011/2012	34,339,328	136,430	0	260,564	260,564	22,100	374,894	10.86
2012/2013	34,714,222	129,951	0	260,820	260,820	22,039	368,732	10.57
2013/2014	35,082,954	129,229	0	247,290	247,290	22,038	354,481	10.05
2014/2015	35,437,435	117,154	0	170,354	170,354	22,035	265,473	7.46
2015/2016	35,702,908	121,492	0	304,047	304,047	18,960	406,579	11.32
2016/2017	36,109,487	110,031	0	320,750	320,750	...	430,781	11.86
2017/2018	36,540,268	105,841	0	412,747	412,747	...	518,588	14.09
2018/2019	37,058,856	...	...	...	...	...	...	...

... not applicable

Note: See "Data quality, concepts and methodology — Explanatory notes for the tables" section.
Source: Statistics Canada, Demography Division.

Table 1.3
Annual estimates of components of demographic growth - Canada

	Natural increase		Interprovincial migration		International migration					
	Births	Deaths	In-migrants	Out-migrants	Immigrants	Emigrants	Returning emigrants	Net temporary emigrants	Net non-permanent residents	Residual deviation
	number									
2011/2012	378,840	242,410	280,347	280,347	260,036	65,393	37,170	26,663	55,414	22,100
2012/2013	381,607	251,656	261,295	261,295	263,101	62,129	36,994	26,667	49,521	22,039
2013/2014	382,281	253,052	275,059	275,059	267,924	63,722	36,889	26,668	32,867	22,038
2014/2015	383,315	266,161	283,809	283,809	240,763	65,837	38,458	26,665	-16,365	22,035
2015/2016	383,579	262,087	277,029	277,029	323,192	67,893	39,660	26,664	35,752	18,960
2016/2017	383,187	273,156	260,393	260,393	272,707	68,705	40,133	26,982	103,597	...
2017/2018	385,777	279,936	285,226	285,226	303,257	69,550	40,626	27,315	165,729	...

... not applicable

Note: See "Data quality, concepts and methodology — Explanatory notes for the tables" section.

Source: Statistics Canada, Demography Division.

Table 1.4
Annual estimates of interprovincial migrants by province or territory of origin and destination, Canada, July 1, 2017 to June 30, 2018

	Destination												
Origin	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
	number												
N.L.	...	258	1,266	522	362	2,864	164	170	3,058	581	35	40	8
P.E.I.	183	...	556	374	160	1,674	35	41	459	426	12	9	12
N.S.	732	451	...	1,796	801	5,393	206	218	2,804	1,310	48	143	52
N.B.	324	486	2,254	...	1,635	3,689	217	235	1,832	714	8	27	41
Que.	228	199	807	1,578	...	19,814	358	434	2,483	3,125	79	74	141
Ont.	1,934	1,266	6,106	3,527	12,729	...	3,091	2,535	15,024	14,601	275	389	564
Man.	144	31	455	281	659	6,711	...	1,795	4,673	4,279	69	114	48
Sask.	144	93	413	199	469	5,065	1,629	...	9,927	4,471	134	88	7
Alta.	1,522	460	2,657	2,098	2,803	17,825	2,393	5,886	...	24,453	345	418	188
B.C.	337	219	1,765	896	2,686	15,542	1,841	1,992	20,904	...	549	220	104
Y.T.	14	0	56	38	54	387	0	86	286	451	...	54	52
N.W.T.	45	23	150	43	127	537	83	124	942	344	105	...	39
Nvt.	65	9	128	61	74	426	43	40	94	99	25	75	...
In-migrants	5,672	3,495	16,613	11,413	22,559	79,927	10,060	13,556	62,486	54,854	1,684	1,651	1,256
Out-migrants	9,328	3,941	13,954	11,462	29,320	62,041	19,259	22,639	61,048	47,055	1,478	2,562	1,139
Net	-3,656	-446	2,659	-49	-6,761	17,886	-9,199	-9,083	1,438	7,799	206	-911	117
Total number of migrants:							**285,226**						

... not applicable

Note: Preliminary estimates based on data from the Canada child benefit (CCB) program and $_{A}$F factors calculated using 2014/2015, 2015/2016 and 2016/2017 tax file data from Canada Revenue Agency.

Source: Statistics Canada, Demography Division.

Methodology

On September 27, 2018, revisions were made to the population estimates. Population estimates from July 2011 to July 2018 were revised based on the 2016 Census counts adjusted for census net undercoverage and for partially enumerated Indian reserves. Historical revisions were also made to some components of demographic growth therefore affecting population estimates starting in July 2001.

This section describes the concepts, data sources and methodology used to produce the population estimates. Population estimates are produced to measure the population counts according to various characteristics and geographies between two censuses. The demographic estimates are the official population estimates at the national, provincial and territorial levels.

Postcensal estimates are based on the 2016 Census.

Population Estimates

Estimates of the total population

Types of estimates

Population estimates can be either intercensal or postcensal. Intercensal estimates are produced using the counts from two consecutive censuses adjusted for census net undercoverage (CNU)[1] and postcensal estimates. The production of intercensal estimates involves updating the postcensal estimates using the counts from a new census adjusted for CNU.[1]

Postcensal estimates are produced using data from the most recent census adjusted for CNU[1] and the components of demographic growth. In terms of timeliness, postcensal estimates are more up-to-date than data from the most recent census adjusted for CNU,[1] but as they get farther from the date of that census, they become more variable.

Levels of estimates

The production of the population estimates between censuses entails the use of data from administrative files or surveys. The quality of population estimates therefore depends on the availability of a number of administrative data files that are provided to Statistics Canada by Canadian and foreign government departments. Since some components are not available until several months after the reference date, three kinds of postcensal estimates are produced preliminary postcensal (PP), updated postcensal (PR) and final postcensal (PD). The time lag between the reference date and the release date is three months for preliminary estimates and two to three years for final estimates. Though it requires more vigilance on the part of users, the production of three successive series of postcensal estimates is the strategy that best satisfies the need for both timeliness and accuracy of the estimates. All tables indicate the level of the estimates they contain.

Calculation of postcensal population estimates

Population estimates – preliminary, updated and final – are produced by the component method. This method consists of taking the population figures from the most recent census, adjusted for the CNU[1] (census undercoverage minus census overcoverage), and adding or subtracting the number of births, deaths, and components of international and interprovincial migration.

A. Provincial / territorial estimates of total population

Population estimates are produced for the provinces and territories first; then they are summed to obtain an estimate of the population of Canada.

1. In this case, the adjustment for the census net undercoverage also includes the incompletely enumerated Indian reserves (IEIR).

The component-method formula for estimating the total provincial / territorial populations is as follows:

$$P_{(t+i)} = P_{(t)} + B_{(t,t+i)} - D_{(t,t+i)} + I_{(t,t+i)} - \left[E_{(t,t+i)} + \Delta TE_{(t,t+i)}\right] + RE_{(t,t+i)} + \Delta NPR_{(t,t+i)} + \Delta \text{Ninter}_{(t,t+i)} - \text{Resid}_{(t,t+i)}$$

where, for each province and territory:

$(t, t+i)$	=	**interval between times t and t+i;**
$P_{(t+i)}$	=	**estimate of the population at time t+i;**
$P_{(t)}$	=	**base population at time t (census adjusted for (CNU)[1] or most recent estimate);**
B	=	**number of births;**
D	=	**number of deaths;**
I	=	**number of immigrants;**
E	=	**number of emigrants;**
ΔTE	=	**net temporary emigration;**
RE	=	**number of returning emigrants;**
ΔNPR	=	**net non-permanent residents;**
$\Delta Ninter$	=	**net interprovincial migration;**
$Resid$	=	**residual deviation (for intercensal estimates).**

B. Levels of estimates

The difference between preliminary[2] and final postcensal population estimates lies in the timeliness of the components. When all the components are preliminary, the population estimate is described as preliminary postcensal (PP). When they are all final, the estimate is referred to as final postcensal (PD). Any other combination of levels is referred to as updated postcensal (PR).

Base population and components of demographic growth

A. Base population

The base populations are derived from the quinquennial censuses between 1971 and 2016. The population universe of the 2016[3] Census includes the following groups:

- Canadian citizens (by birth or by naturalization) and immigrants with a usual place of residence in Canada;
- Canadian citizens (by birth or by naturalization) and immigrants who are abroad either on a military base or attached to a diplomatic mission;
- Canadian citizens (by birth or by naturalization) and immigrants at sea or in port aboard merchant vessels under Canadian registry or Canadian government vessels;
- persons with a usual place of residence in Canada who are claiming refugee status and the family members living with them;
- persons with a usual place of residence in Canada who hold study permits and the family members living with them;
- persons with a usual place of residence in Canada who hold work permits and the family members living with them.

2. Unless otherwise noted, the term preliminary include both preliminary and updated estimates.
3. From 1991 to 2001 Census, "persons with a usual place of residence in Canada who hold Minister's permits (including extensions) and members of their families living with them" were included in the census universe.

For census purposes, the last three groups are referred to as non-permanent residents (NPR). They have been included in the census universe since 1991 but foreign residents are not included. Foreign residents are persons who belong to the following groups:

- government representatives of another country attached to the embassy, high commission or other diplomatic body of that country in Canada, and members of their families living with them;
- members of the Armed Forces of another country who are stationed in Canada, and family members living with them;
- residents of another country visiting Canada temporarily (for example, a foreign visitor on vacation or on business, with or without a visitor's permit).

These base populations are adjusted as follows:

- adjustment of the population for CNU;
- addition of independent estimates for incompletely enumerated Indian reserves in 1991, 1996, 2001, 2006, 2011 and 2016;
- adjustment for early enumeration in 1991 and 1996 in parts of Northern Quebec, Newfoundland and Labrador, the Yukon and the Northwest Territories;
- addition of estimates of NPRs in 1971, 1976, 1981 and 1986. Since 1991, NPRs are included in the census universe;
- estimation of the July 1 base population by addition or subtraction of the components of growth between Census Day and June 30.

Adjustment for the census net undercoverage (CNU)

The adjustment for CNU is important. CNU is the difference between the number of persons who should have been enumerated but were missed (undercoverage) and the number of persons who were enumerated but should not have been or who were counted more than once (overcoverage).

Coverage studies provide undercoverage estimates for the 1991, 1996, 2001, 2006, 2011 and 2016 censuses at the provincial and territorial levels, and for the 1971, 1976, 1981 and 1986 censuses at the provincial level only. Estimates of overcoverage at the provincial and territorial levels are available only for the last six censuses (1991 to 2016). Overcoverage for previous censuses was estimated by assuming that the overcoverage-to-undercoverage ratio for each census between 1971 and 1986 was the same as in 1991. The CNU for the Yukon and the Northwest Territories prior to 1991 was estimated by assuming that the ratio between the CNU for each territory and the 10 provinces for each census between 1971 and 1986 was the same as in 1991.

For consistency, the 1991 Census undercoverage and overcoverage were revised in 1998 to take into account the methodological improvements made in the 1996 Census coverage studies. This revision altered CNU in all censuses between 1971 and 1986. Similarly, the 1996 Census undercoverage and overcoverage were revised in 2003.

B. Births and deaths

The numbers of births and deaths are derived directly from the vital statistics database of Statistics Canada's Health Statistics Division. Although Statistics Canada manages the National system of vital statistics, the central vital statistics registries of the provinces and territories are responsible for collecting and processing the information from those administrative files. Under provincial / territorial vital statistics statutes (or similar legislation), all live births and all deaths must be registered, and all provinces and territories provide this information to Statistics Canada.

The vital statistics universe applied to the population estimates includes births and deaths occurring in Canada, in which the usual place of residence of either the birth mother or the deceased is Canada. Any death or birth occurring outside of Canada, even if the mother or the deceased is Canadian, is excluded from the vital statistics population.

Vital statistics by province or territory of residence are used to produce our final estimates of births and deaths. However, before 2011, the final estimates may differ from the data released by the Health Statistics Division due to the imputation of certain unknown values. In addition, for estimates of deaths, the age represents age at the beginning of the period (July 1st) and not the age at the time of occurrence, as with the Health Statistics Division data.

When there are no vital statistics, the number of births is estimated using fertility rates by the mother's age group. The number of deaths is estimated by using mortality rates by age group and sex. These methods are used to calculate preliminary[2] estimates.

Special treatment for preliminary[2] estimates for Quebec and British Columbia

Quebec and British Columbia provide their most recent estimates of births and deaths. The figures are used to produce preliminary[2] estimates. For the final estimates, the two provinces' births and deaths are derived from the vital statistics compiled by Health Statistics Division.

Levels of estimates

For information on the differences between preliminary[2] and final estimates, see section **B. Births and Deaths**, above.

C. Immigration

Like the numbers of births and deaths, Canadian immigration statistics must be kept by law. In Canada, immigration is regulated by the *Immigration and Refugee Protection Act* (IRPA) of 2002. This statute superseded the *Immigration Act*, which was passed in 1976 and amended more than 30 times in the years thereafter. Immigration, Refugees and Citizenship Canada (IRCC) collects and processes immigrants' administrative files. It then provides Statistics Canada with information from Global Case Management System (GCMS) files (until December 2010, data come from the Field Operational Support System files (FOSS)). The information is used to estimate the number and characteristics of people granted permanent resident status by the federal government on a given date. For Demography Division, the terms immigrant and permanent resident are equivalent.

An immigrant is a person who is not a Canadian citizen by birth, but has been granted the right to live in Canada permanently by Canadian immigration authorities. The number of immigrants does not include persons born abroad to Canadian parents who are only temporarily outside the country.

Immigrants are usually counted on or after the date on which they are granted permanent resident status or the right to live in Canada.

Levels of estimates

The difference between preliminary[2] and final postcensal estimates lies in the timeliness of the source used to estimate this component. Since the GCMS files are continually being updated, new calculations are carried out each year to update the immigration estimates. Immigration estimates are preliminary the first year and final the second year.

D. Net non-permanent residents

Like the numbers of births and deaths, Canadian immigration statistics must be kept by law. In Canada, the non-permanent residents (NPR) are regulated by the *Immigration and Refugee Protection Act* (IRPA) of 2002. This statute superseded the *Immigration Act*, which was passed in 1976 and amended more than 30 times in the years thereafter. Immigration, Refugees and Citizenship Canada (IRCC) collects and processes the administrative files of immigrants and NPRs in Canada. It then provides Statistics Canada with information from Global Case Management System (GCMS) files (until June 2011, data come from the Field Operational Support System files (FOSS)). The information is used to estimate the number and characteristics of people granted non-permanent resident status by the federal government.

NPRs are persons who are lawfully in Canada on a temporary basis under the authority of a temporary resident permit, along with members of their family living with them. NPRs include foreign workers, foreign students, the humanitarian population and other temporary residents. The humanitarian population includes refugee claimants and temporary residents who are allowed to remain in Canada on humanitarian grounds and are not categorized as either foreign workers or foreign students. For Demography Division, the terms non-permanent resident and temporary resident are equivalent.

The number of people in IRCC's administrative system is estimated on a specific date in each period of observation. First, the end-of-period number of NPR is estimated, and then the start-of-period number of NPR is subtracted from that estimate. That yields the net NPRs used in the calculation of the population estimates.

Anyone who received non-permanent resident status prior to the observation date is counted. For refugee claimants, the date of their application is used. Permit holders and refugee claimants are excluded from the population if their permit has expired, if they receive permanent resident status, or if they are deported. In addition, refugee claimants are excluded if their file has been inactive for two years.

Since GCMS files are continually being updated, the figures are recalculated each year until the estimates of net NPR are final.

Levels of estimates

The difference between preliminary[2] and final estimates lies in the timeliness of the source used to estimate this component. Since the GCMS files are continually being updated, the figures are recalculated each year to update the estimates of the net number of NPRs. Non-permanent resident (NPR) estimates are preliminary the first year and updated the following year. They become final two to three years after the reference year, when all other components are also final.

E. Emigration

The number of emigrants is estimated using data from the Office of Immigration Statistics, U.S. Department of Homeland Security, data collected by the Canada child benefit (CCB) program and data from the T1 Family File (T1FF[4]). The first source is used to estimate emigration to the United States. CCB data are used to estimate emigration to other countries. The estimates of the number of child emigrants have to be adjusted because the CCB is not universal and does not provide direct information on the number of adult emigrants. As a result, four adjustment factors are taken into account:

- incomplete coverage due to a delay in the receipt and processing of the files of children eligible for the CCB. Since it seems to take four years after the reference period for CCB administrative files to become complete, the adjustment is made when the estimates are used before this date. The factor is derived from the two-year ratios of emigrant children based on two versions of the CCB files;
- the program's partial coverage, that is, people who do not apply for the CCB or who are not eligible. This factor is obtained by comparing the estimated number of children in the population with the number of children in CCB files;

4. The T1 family file (T1FF) is derived from the Canada Revenue Agency (CRA) T1 file by Income Statistics Division of Statistics Canada.

- the differential propensity to emigrate between children who are eligible for the CCB and children who are not. This factor is obtained by comparing the emigration rates of CCB-eligible children with the rates for all children (aged 0 to 17). This factor is calculated for each province and territory and is based on the last three available years of T1FF;[4]
- the differential propensity to emigrate between adults and children. This factor generates the emigration rate for the population aged 18 and over. It is obtained by (1) calculating the average ratio over three years of the adult and child emigration rates based on T1FF[4] data, (2) calculating the average ratio over three years of the adult and child emigration rates based on data from the Office of Immigration Statistics, U.S. Department of Homeland Security, and (3) taking the average of the two rates. This factor is calculated for Canada only.

The adult emigration rate is applied to the adult population. Adult emigration is distributed by province and territory using data from the T1FF[4] file. We calculate a ratio of the number of emigrant adults to the number of emigrant children from the T1FF[4] file. We then apply this ratio to the number of emigrant children from the CCB by province, which yields the number of adult emigrants whose provincial distribution will differ from that of the children.

The number of adult emigrants combined with the number of child emigrants (once adjusted for the coverage and differential emigration factors) generate the number of emigrants for the entire population.

Emigration is disaggregated by province and territory based on the number of child emigrants adjusted for coverage and differential emigration.

Please note that the estimates for the most recent periods are expected to be very similar. In the absence of more up-to-date data sources, the emigration rate of the last available year is applied to the beginning of the year population estimate to be estimated.

Levels of estimates

For information on the differences between preliminary[2] and final estimates, see section **E. Emigration**, above.

F. Net temporary emigration

Some people leave Canada to live temporarily in another country while others who were temporarily outside of Canada return. The net result of those departures and returns is the component known as "net temporary emigration". Estimates of the number of departures are derived from the Reverse Record Check (RRC), the most important census coverage study. The RRC provides an estimate of the number of people who left Canada temporarily during an intercensal period and are still out of the country at the end of the period. Estimates of the number of returns are based on two sources: the census and Demography Division's estimates of returning emigrants. The census provides the number of people who were outside Canada at the time of the previous census and returned during the intercensal period. That number includes all returning emigrants. Then Demography Division's estimate of the returning emigrants component is subtracted to produce the number of returning temporary emigrants. The estimated numbers of departures (RRC) and returns (census and Demography Division) yield an estimate of net temporary emigration.

The five-year net temporary emigration is calculated first at the national level. It is then disaggregated by province or group of provinces based on RRC estimates of temporary emigration. For the Atlantic provinces and the territories, the estimate for the group is disaggregated on the basis of each province / territory's proportion of the group's total population.

This estimate is for the whole intercensal period; it is disaggregated into estimates for each of the five years in the period and then into monthly estimates using a seasonal adjustment that is an average between zero seasonality and the seasonality of emigration.

Net temporary emigration can be estimated only for the intercensal period preceding the most recent census. For the current period, the rate of the last available year is applied to the beginning of the year population estimate to be estimated.

Levels of estimates

The difference between preliminary[2] and final estimates lies in the timeliness of the emigration estimate used to calculate the seasonal adjustment for the net temporary emigration. The same estimation method is used.

G. Returning emigrants

A returning emigrant is a person who returns to Canada after having been classified as an emigrant. In a manner similar to the procedure used to calculate the number of emigrants, data from the Canada child benefit (CCB) file from Canada Revenue Agency (CRA) and T1FF[4] file are used to estimate the number of returning emigrants. Adjustment factors are applied to compensate for the fact that the CCB program is not universal, and an adult/child ratio is used to estimate the number of adult returning emigrants. As a result, four adjustment factors are used to take into account:

- incomplete coverage due to a delay in the receipt and processing of the files of children eligible for the CCB. Since it seems to take four years after the reference period for CCB administrative files to become complete, the adjustment is made when the estimates are used before this date. The factor is derived from the two-year ratios of returning emigrant children based on two versions of the CCB files;
- the program's partial coverage, that is, people who do not apply for the CCB or who are not eligible. This factor is obtained by comparing the estimated number of children in the population with the number of children in CCB files;
- the differential propensity to emigrate between children who are eligible for the CCB and children who are not. This factor is obtained by comparing the emigration rates of CCB-eligible children with the rates for all children (aged 0 to 17). This factor is calculated for each province and territory and is based on the last three available years of T1FFs;[4]
- the adult / child ratio, which is based on the 2011 National Household Survey.

Please note that the estimates for the most recent periods are expected to be identical or very similar. In the absence of more up-to-date data sources, the assumption is made that levels remain similar.

Levels of estimates

For information on the differences between preliminary[2] and final estimates, see section **G. Returning emigrants**, above.

H. Interprovincial migration

Interprovincial migration represents movements from one province or territory to another, involving a change in usual place of residence. As is the case for emigration, there is no provision for recording interprovincial migration in Canada. Consequently, such movements have to be estimated using data from the Canada child benefit (CCB) of Canada Revenue Agency (CRA) and T1FF.[4]

Final estimates of interprovincial migration are obtained by comparing addresses indicated on personal income tax returns over two consecutive tax years. However, the migration status of tax filers' dependants has to be imputed. An adjustment is also required to take into account migrants who do not file income tax returns. From 2001/2002 to 2005/2006, the adjustment was slightly modified (for further information, see Wilkinson, 2004). From 2006/2007, this adjustment has been slightly modified (Cyr, 2008 – Internal document).

Since income tax returns are not available at the time preliminary[2] estimates are produced, the estimation of preliminary[2] interprovincial migration is based on CCB administrative files, which provide counts of child migrants (aged 0 to 17) registered to the program. The estimates have to be adjusted later for children who are not registered to the CCB program. Finally, the number of adult migrants is calculated using the number of child migrants and factors derived from the T1FF.[4] As a result, three adjustment factors are used to take into account:

- the program's partial coverage, that is, people who are not registered to the CCB program. This factor is obtained by comparing the estimated number of children in the population with the number of children in CCB files;

- the differential propensity to migrate between children who are registered to the CCB program and children who are not. This factor is obtained by comparing the out-migration rates of children registered to the CCB program with the rates for all children (aged 0 to 17). This factor is calculated for each province and territory and is based on the last available year of T1FF;[4]
- the differential propensity to migrate between adults and children. This factor generates the out-migration rate of the population aged 18 and over for each province / territory of origin and destination. It is obtained by calculating the ratio of the central migration rate for adults to the rate for children. It is estimated using data from the last three available years of T1FF.[4]

The adult migration rate is then applied to the estimated adult population. The number of adult migrants is then added to the number of child migrants to produce the number of interprovincial migrants for the entire population.

Since 2015, the method to estimate the interprovincial migration has been modified. This new method is applied from July 2011 onward. In order to reduce the differences between the preliminary annual series (which was derived from the sum of 12 monthly migration matrices) and the final annual series, CCB microdata have been used. Using microdata is allowing estimating migration for various periods (monthly, quarterly and annually). It also allows improving the comparability between preliminary and final estimates. Final annual estimates (T1FF)[4] are now distributed by quarter on the basis of preliminary[2] quarterly estimates derived from CCB microdata. It is important to note that, as a result of using CCB microdata, it is not possible to add the quarterly interprovincial in-migrants and out-migrants estimates to get the annual estimates. It is however possible to add the quarterly net interprovincial migration estimates to get the annual estimates.

Levels of estimates

For information on the differences between preliminary[2] and final estimates of total interprovincial migration, see section **H. Interprovincial migration** above.

Intercensal population estimates

Intercensal estimates – population estimates for reference dates between two censuses – are produced following each census. They reconcile previous postcensal estimates with the new census counts adjusted for the CNU[1].

There are two main steps in the production of intercensal estimates:

- calculation of the error of closure;
- linear distribution of the error of closure.

The error of closure is defined as the difference between the postcensal population estimates on Census Day and the population enumerated in that census adjusted for CNU.[1]

The error of closure is spread uniformly over the intercensal period of days within each month.

Quality of demographic data

The estimates contain certain inaccuracies stemming from two types of errors:

- errors in the census data;
- imperfections in other data sources and the method used to estimate the components.

Census data

A. Coverage, response and imputation errors

The errors attributable to census data can be divided into two groups: response and processing errors, and coverage errors. The first group implies non-response error, misinterpretation by respondents, incorrect coding and non-response imputation. Errors in the second group primarily result from undercoverage and, to a lesser extent, overcoverage. It should be noted that both types of errors are intrinsic to any survey data.

The coverage errors occur when dwellings and/or individuals are missed, incorrectly included (except for the 2006, 2011 and 2016 censuses, where people incorrectly included were not considered in the Census Overcoverage Study) or counted more than once. Following each census, Statistics Canada undertakes coverage studies to measure these errors. The main studies are the Reverse Record Check Survey (RRC) and the Census Overcoverage Study (COS). Based on these studies, estimates of census undercoverage and overcoverage are produced. Demography Division adjusts the population enumerated in the census by province and territory using these estimates.

When creating base populations, the Demographic Estimates Program (DEP) corrects the census populations only for coverage errors. This correction, which is based on the findings of coverage studies, is primarily subject to sampling errors, and to a lesser extent, processing errors. Statistical tests indicate that coverage adjustments improve the quality of census data. The DEP uses the estimates from coverage studies for the provinces and territories. However, given the size of the samples in these studies, estimates by age and sex are modelled. Furthermore, it is assumed that the coverage rates estimated for a province or territory apply to the regions within that geographic area. Prior to 1993[5], the DEP used census data that was unadjusted for coverage errors. Coverage studies had been done to measure undercoverage, but none measured overcoverage. Following the decision to integrate a correction for the coverage to the enumerated population in 1991, the DEP had to revise the population estimates for the period from 1971 to 1992. The correction is based on the findings of the coverage studies conducted during this period and on hypotheses regarding the ratio between the overcoverage and undercoverage levels based on the findings of subsequent coverage studies.

The corrections to the census data due to CNU improved, in general, the quality of the estimates by compensating for the differential undercoverage by age, sex and by province/territory across censuses.

5. In September 1993, the DEP took advantage of the integration of the 1991 Census counts to produce a series of estimates beginning in 1971 and including census net undercoverage.

Text table 1
Estimated census net undercoverage, Canada, provinces and territories, 2001 to 2016 censuses

Geography	Census population	Census net undercoverage	Incompletely enumerated Indian reserves	Adjusted population	Rate
	A	B	C	D=A+B+C	(B+C)/D*100
	number				percent
2016[1]					
Canada	**35,151,728**	**849,727**	**27,790**	**36,029,245**	**2.44**
Newfoundland and Labrador	519,716	9,774	0	529,490	1.85
Prince Edward Island	142,907	3,464	0	146,371	2.37
Nova Scotia	923,598	17,809	0	941,407	1.89
New Brunswick	747,101	15,735	0	762,836	2.06
Quebec	8,164,361	35,191	11,985	8,211,537	0.57
Ontario	13,448,494	381,542	11,640	13,841,676	2.84
Manitoba	1,278,365	31,895	0	1,310,260	2.43
Saskatchewan	1,098,352	34,844	0	1,133,196	3.07
Alberta	4,067,175	115,968	4,043	4,187,186	2.87
British Columbia	4,648,055	197,267	122	4,845,444	4.07
Yukon	35,874	2,370	0	38,244	6.20
Northwest Territories	41,786	2,939	0	44,725	6.57
Nunavut	35,944	929	0	36,873	2.52
2011[1]					
Canada	**33,476,688**	**759,125**	**37,392**	**34,273,205**	**2.32**
Newfoundland and Labrador	514,536	10,192	0	524,728	1.94
Prince Edward Island	140,204	3,386	0	143,590	2.36
Nova Scotia	921,727	21,911	0	943,638	2.32
New Brunswick	751,171	3,930	0	755,101	0.52
Quebec	7,903,001	73,240	16,882	7,993,123	1.13
Ontario	12,851,821	369,874	14,926	13,236,621	2.91
Manitoba	1,208,268	21,698	608	1,230,574	1.81
Saskatchewan	1,033,381	29,580	768	1,063,729	2.85
Alberta	3,645,257	128,584	4,094	3,777,935	3.51
British Columbia	4,400,057	91,280	114	4,491,451	2.03
Yukon	33,897	1,356	0	35,253	3.85
Northwest Territories	41,462	1,977	0	43,439	4.55
Nunavut	31,906	2,117	0	34,023	6.22
2006[1]					
Canada	**31,612,897**	**868,658**	**40,115**	**32,521,670**	**2.79**
Newfoundland and Labrador	505,469	5,046	0	510,515	0.99
Prince Edward Island	135,851	1,903	0	137,754	1.38
Nova Scotia	913,462	24,558	0	938,020	2.62
New Brunswick	729,997	16,059	0	746,056	2.15
Quebec	7,546,131	60,751	16,600	7,623,482	1.01
Ontario	12,160,282	465,824	15,391	12,641,497	3.81
Manitoba	1,148,401	34,330	0	1,182,731	2.90
Saskatchewan	968,157	22,594	739	991,490	2.35
Alberta	3,290,350	111,353	7,272	3,408,975	3.48
British Columbia	4,113,487	121,551	113	4,235,151	2.87
Yukon	30,372	1,805	0	32,177	5.61
Northwest Territories	41,464	1,620	0	43,084	3.76
Nunavut	29,474	1,264	0	30,738	4.11
2001[1]					
Canada	**30,007,094**	**924,430**	**34,539**	**30,966,063**	**3.10**
Newfoundland and Labrador	512,930	9,401	0	522,331	1.80
Prince Edward Island	135,294	1,325	0	136,619	0.97
Nova Scotia	908,007	24,521	0	932,528	2.63
New Brunswick	729,498	20,095	0	749,593	2.68
Quebec	7,237,479	140,232	12,648	7,390,359	2.07
Ontario	11,410,046	436,349	15,960	11,862,355	3.81
Manitoba	1,119,583	30,903	110	1,150,596	2.70
Saskatchewan	978,933	21,231	581	1,000,745	2.18
Alberta	2,974,807	69,857	4,977	3,049,641	2.45
British Columbia	3,907,738	164,542	263	4,072,543	4.05
Yukon	28,674	1,423	0	30,097	4.73
Northwest Territories	37,360	3,295	0	40,655	8.10
Nunavut	26,745	1,256	0	28,001	4.49

1. The levels and rates are based on the Reverse Record Check (RRC) and the Overcoverage Study and include non-permanent residents.

Source: Statistics Canada, Demography Division.

The adjustment also incorporates the results of a study on the estimates of the number of people living on incompletely enumerated Indian reserves to complete the corrections for coverage errors in the census. The results of the coverage studies contain mainly sampling errors.

These adjustments have a direct impact on:

- the error of closure and its distribution by age and sex within a province or a territory as well as by province/territory as the CNU[1] and its distribution vary from one census to another;
- within-cohort consistency of population estimates. If for example, the male cohort of children in age group 0 to 4 in 1981 was tracked up to the 2001 Census (unadjusted for CNU)[1] the age group 20 to 24 would be noticeably smaller in 2001 than the age group 15 to 19 in 1996. Since Canada receives many immigrants within these age groups, the opposite would be expected. However, only after adjustment for CNU,[1] the cohort size increases from 1996 to 2001.

For further information regarding the main coverage studies, please see the following document on Statistics Canada's web site: 1996, 2001, 2006 and 2011 Census Technical Report on Coverage. The 2016 Census report will be available in 2019.

Components

Errors due to estimation methodologies and data sources other than the census can also be significant.

A. Births and deaths

Since the law requires the recording of vital statistics, the final estimates for births and deaths data meet very high standards. Nevertheless, since preliminary[2] estimates are derived, they can be slightly different from final estimates.

B. Immigration and non-permanent residents

With respect to immigrants and non-permanent residents, Immigration, Refugees and Citizenship Canada (IRCC) administers special data files on both of these components. Since immigration is controlled by law, data on immigrants and NPRs are compiled upon arrival in Canada. These data represent only "legal" immigration and exclude illegal immigrants. Thus, for the "legal" part of international movement into Canada, the data are considered to be of high quality. However, some biases such as the difference between the stated province of intended residence at the time of arrival and the actual province of residence, may persist. Finally, since information provided by the Visitor Data System (VDS) from IRCC is not complete (age and sex of dependents, province of residence for certain groups of permit holders), estimates of NPRs are more prone to error than data on immigrants.

C. Emigration, returning emigration and net temporary emigration

Of all the demographic components that are used by the DEP, the emigration, returning emigration and net temporary emigration are the most difficult to estimate with precision. Canada does not have a complete border registration system. While immigration and non-permanent residents (NPRs) are well documented by the federal government, Statistics Canada has always used indirect techniques for the estimation of the number of persons leaving the country. For this reason, available statistics regarding these three components have historically been of a lower quality than other components.

Estimates of the number of emigrants and returning emigrants are both derived using Canada child benefit (CCB) data provided by Canada Revenue Agency (CRA). Estimates must be adjusted to take into account the incomplete coverage of the program and to derive the emigration and returning emigration of adults.

These adjustments and the delay in obtaining the data are the two main sources of errors. As current information on the number of persons living temporarily abroad does not exist, estimates are based on the Reverse Record Check (RRC) and the census. Estimates for the intercensal period are distributed equally among the five years. Moreover, assumptions were made to allow for the distribution of national estimates by province and territory and of annual estimates to a quarterly level. Assumptions must also be made to establish the variation for the postcensal period. Any geographical or quarterly variation may introduce error in the estimation of these components.

D. Interprovincial migration

Since July 1993, preliminary[2] interprovincial migration estimates have been based on Canada child benefit (CCB) files. As this program covers only children, various adjustments must be done in order to derive the migration of adults. Consequently, preliminary[2] CCB based estimates are subject to larger error than final estimates derived from Canada Revenue Agency (CRA) tax files.

Quality assessment

In order to assess the quality of our estimates, two evaluation measures are used: precocity errors and errors of closure.

A. Precocity error

The quality of preliminary estimates of components is evaluated using precocity errors. Precocity error is defined as the difference between preliminary and final estimates of a particular component in terms of its relative proportion of the total population for the relevant geographical area. It can be calculated for both population and component estimates. The precocity error measures the impact of the trade-off of accuracy in favour of timeliness on the estimated population. The annual precocity error of a component is calculated as:

$$PE_{(t-1,t)} \quad \frac{\left(N^{preliminary}_{(t-1,t)} \quad N^{final}_{(t-1,t)}\right)}{P^{postcensal}_{(t-1)}} \quad \text{x} \quad 1{,}000$$

where,

$PE_{(t-1,t)}$ = the precocity error for the period from t-1 to t;

$N^{preliminary}_{(t-1,t)}$ = the preliminary estimate of a component of demographic change;

$N^{final}_{(t-1,t)}$ = the final estimate of a component of demographic change;

$P^{postcensal}_{(t-1)}$ = postcensal estimates of population for the relevant geographical area at time t-1.

Precocity error allows for useful comparisons between components, as well as between provinces and territories or geographical areas of different population size. Precocity error can either be positive or negative. A positive precocity error denotes that the preliminary estimate is larger than the final estimate while a negative precocity error indicates the opposite. As precocity errors measure differences between preliminary and final estimates, small precocity errors refer to those that are close to zero per thousand.

Precocity error by component for Canada

At the national level, immigration component yielded the smallest precocity errors in absolute numbers, with values close to zero per thousand throughout the years under consideration. On the other hand, interprovincial in-migrants and out-migrants[6] yielded the largest precocity errors in absolute numbers, ranging between 0.07 per thousand and 1.27 per thousand during the period 2013/2014 to 2016/2017 (see Text table 2).

6. At the national level, net interprovincial migration equals to zero as the sum of interprovincial in-migrants is equivalent to the sum of interprovincial out-migrants.

Text table 2
Most up-to-date annual precocity errors for components, Canada, provinces and territories

Year/Component	Canada	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
	per thousand													
Births														
2012/2013	0.06	-0.06	0.70	0.33	0.12	-0.02	0.14	-0.37	0.03	0.13	-0.01	1.00	0.21	-0.69
2013/2014	0.10	-0.26	0.18	0.20	-0.29	-0.04	0.17	-0.08	0.19	0.45	-0.03	0.74	0.91	-0.48
2014/2015	0.15	-0.11	0.37	0.07	0.03	-0.05	0.32	-0.13	0.23	0.33	-0.03	0.76	0.50	-0.17
2015/2016	0.26	-0.37	-0.62	0.33	0.09	-0.01	0.53	0.48	0.40	0.27	-0.04	-0.24	-0.52	0.57
Deaths														
2012/2013	0.05	-0.06	0.33	0.15	0.14	0.02	0.05	0.30	0.16	0.02	-0.03	-0.30	-0.41	-0.23
2013/2014	0.10	0.10	0.25	0.36	0.29	-0.05	0.19	0.20	0.24	0.13	-0.04	0.63	-0.32	0.28
2014/2015	0.05	-0.57	-0.14	-0.21	-0.46	0.00	0.20	-0.11	0.33	-0.01	-0.04	0.60	0.21	0.61
2015/2016	0.19	0.10	1.41	0.09	0.11	-0.03	0.40	0.19	0.18	0.24	-0.06	0.56	0.00	-0.33
Immigration														
2013/2014	-0.01	-0.01	-0.05	-0.01	0.01	-0.01	0.00	-0.05	-0.03	0.00	-0.02	0.00	0.02	0.00
2014/2015	-0.03	0.00	-0.03	-0.01	-0.01	-0.02	-0.02	-0.07	-0.05	-0.04	-0.04	-0.05	-0.02	0.00
2015/2016	-0.06	-0.03	-0.05	-0.06	-0.03	-0.03	-0.05	-0.13	-0.13	-0.11	-0.09	0.00	-0.02	0.00
2016/2017	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emigration														
2012/2013	-0.14	-0.33	0.02	-0.03	0.06	0.01	-0.20	0.16	-0.09	-0.22	-0.33	-0.88	0.16	0.43
2013/2014	-0.05	-0.02	-0.30	0.22	0.06	-0.06	-0.12	-0.04	-0.07	0.06	-0.03	1.57	0.59	-0.08
2014/2015	-0.16	0.32	0.09	0.09	-0.32	-0.26	-0.17	-0.25	-0.33	-0.17	-0.01	1.06	0.55	-0.11
2015/2016	-0.10	-0.06	-0.20	-0.03	-0.05	-0.03	-0.13	-0.06	-0.25	-0.30	0.06	-1.02	0.00	0.11
Returning emigration														
2012/2013	-0.01	0.05	-0.43	0.01	0.06	-0.04	0.00	-0.14	0.14	0.07	-0.07	0.33	-0.34	0.00
2013/2014	0.00	0.00	-0.29	0.02	0.06	0.07	0.00	0.14	0.05	-0.10	-0.11	-0.55	-0.23	0.00
2014/2015	-0.06	0.04	0.31	0.10	0.05	0.07	-0.08	0.29	-0.20	-0.15	-0.27	0.00	0.34	-0.08
2015/2016	-0.06	0.08	0.29	-0.03	0.03	-0.06	-0.09	0.11	-0.06	0.09	-0.19	0.32	0.23	0.00
Net temporary emigration														
2012/2013	-0.24	-0.03	-0.03	-0.02	-0.03	-0.28	-0.47	0.06	-0.26	0.02	0.12	-0.28	-0.09	-0.35
2013/2014	-0.23	-0.03	-0.04	-0.02	-0.03	-0.28	-0.46	0.06	-0.25	0.02	0.11	-0.27	-0.16	-0.25
2014/2015	-0.23	-0.03	-0.03	-0.02	-0.03	-0.28	-0.46	0.05	-0.25	0.02	0.11	-0.27	-0.21	-0.28
2015/2016	-0.23	-0.03	-0.03	-0.02	-0.03	-0.28	-0.45	0.05	-0.25	0.02	0.11	-0.27	-0.18	-0.25
Net non-permanent residents														
2012/2013	-0.01	0.09	0.97	-0.29	0.03	0.24	-0.67	0.11	0.55	1.40	0.16	-0.11	0.55	0.00
2013/2014	0.00	0.30	0.45	0.23	0.06	-0.02	0.05	-0.20	0.14	-0.21	-0.04	0.41	-0.43	0.14
2014/2015	0.17	-0.04	-0.49	0.00	-0.01	0.07	0.28	-0.18	0.54	-0.65	1.14	-0.79	-0.36	0.06
2015/2016	0.07	0.21	0.03	0.33	0.18	0.01	0.17	0.21	0.12	0.14	-0.34	0.05	0.00	-0.03
In-migrants														
2013/2014	1.27	1.44	2.96	2.03	2.25	0.70	0.79	2.85	4.96	3.55	-0.10	2.86	4.23	13.62
2014/2015	0.07	0.38	-1.13	1.22	0.68	0.11	-0.08	0.03	1.22	1.04	-1.22	7.77	4.65	16.25
2015/2016	0.22	1.11	0.01	-0.49	0.53	0.04	-0.05	0.23	0.42	1.77	-0.21	-1.63	4.91	10.82
2016/2017	0.73	0.67	0.98	0.29	1.27	0.30	0.88	-0.01	1.70	1.25	0.49	-2.28	2.69	14.36
Out-migrants														
2013/2014	1.27	6.07	3.07	1.61	2.99	0.58	0.75	1.25	2.19	2.71	1.47	12.73	10.92	-0.48
2014/2015	0.07	3.33	2.71	0.13	0.69	-0.07	-0.08	0.88	0.03	-0.74	0.50	7.69	9.88	7.79
2015/2016	0.22	1.04	5.18	1.41	2.08	0.15	0.16	1.02	-0.08	-1.15	0.49	18.04	8.78	10.79
2016/2017	0.73	1.66	6.97	2.62	2.95	0.62	-0.01	1.35	1.58	1.15	1.04	15.64	13.04	7.90
Net interprovincial migration														
2013/2014	...	-4.62	-0.11	0.42	-0.74	0.12	0.04	1.60	2.77	0.83	-1.57	-9.87	-6.69	14.10
2014/2015	...	-2.95	-3.84	1.09	-0.01	0.18	0.00	-0.84	1.19	1.78	-1.72	0.08	-5.22	8.46
2015/2016	...	0.07	-5.17	-1.90	-1.55	-0.12	-0.21	-0.79	0.49	2.93	-0.71	-19.66	-3.87	0.03
2016/2017	...	-0.99	-5.99	-2.33	-1.68	-0.32	0.89	-1.36	0.13	0.10	-0.55	-17.93	-10.35	6.46

... not applicable

Source: Statistics Canada, Demography Division.

Precocity errors for births were positive during the period under consideration, ranging from 0.06 per thousand in 2012/2013 to 0.26 per thousand in 2015/2016. Similar to births, precocity errors for deaths were also positive during the same time period with values ranging from 0.05 per thousand in 2012/2013 to 0.19 per thousand in 2015/2016.

Precocity errors for emigration and returning emigration were mostly negative. During the years under consideration, precocity error in absolute number for emigration was lowest in 2013/2014 at 0.05 per thousand and largest in 2014/2015 at 0.16 per thousand. For returning emigration, the absolute values ranged from close to zero per thousand in 2013/2014 to 0.06 per thousand in 2014/2015 and 2015/2016. During the period 2012/2013 to 2015/2016, the precocity errors for net temporary emigration were fairly consistent, ranging between -0.24 and -0.23 per thousand.

Precocity errors for net non-permanent residents were generally low during the period under consideration. Precocity error was negative in 2012/2013 at -0.01 per thousand then changed to positive thereafter. Precocity error was close to zero per thousand in 2013/2014, changed to 0.17 per thousand in 2014/2015 and 0.07 per thousand in 2015/2016.

Precocity error by component for provinces and territories

In general, precocity error is typically more prone to higher volatility for smaller provinces or territories as it is an error measurement relative to population size. At the provincial and territorial level, precocity errors for births in absolute numbers ranged from 0.01 per thousand (British Columbia in 2012/2013 and Quebec in 2015/2016)[7] to 1.00 per thousand (Yukon in 2012/2013). Similar to births, precocity errors for deaths were predominantly positive. Over the years, the largest precocity error in absolute number for deaths was 1.41 per thousand (Prince Edward Island in 2015/2016).

Compared to other demographic components, precocity errors for immigration were low among the provinces and territories, with absolute error values no more than 0.13 per thousand over the current years.

Precocity errors in absolute numbers for the net change in the number of non-permanent residents were less than or equal to 1.40 per thousand across the provinces and territories, during the years 2012/2013 and 2015/2016.

Precocity errors in absolute numbers for emigration ranged from the lowest at close to zero per thousand (Northwest Territories in 2015/2016) to the largest at 1.57 per thousand (Yukon in 2013/2014). Absolute precocity errors for returning emigration ranged from close to zero per thousand for some years in Newfoundland and Labrador, Ontario, Yukon and Nunavut to 0.55 per thousand for Yukon in 2013/2014. Precocity errors for net temporary emigration were negative during the years under consideration, except for Manitoba, Alberta and British Columbia.

Precocity errors for interprovincial in-migrants and out-migrants show that final estimates were mostly lower than preliminary estimates in 2013/2014. Compared to 2013/2014, precocity errors for interprovincial in-migrants and out-migrants were considerably lower in 2014/2015 and subsequent years as a new method was implemented to estimate interprovincial migration which resulted in less overestimation of preliminary estimates[8].

At the provincial level, the largest absolute precocity error value for net interprovincial migration was 5.99 per thousand (Prince Edward Island in 2016/2017), while the smallest was close to zero per thousand (Ontario in 2014/2015). At the territorial level, precocity errors for net interprovincial migration were comparatively higher, the smallest absolute precocity error was 0.03 per thousand (Nunavut in 2015/2016) and the largest was 19.66 per thousand (Yukon in 2015/2016).

Contribution of components to the sum of precocity errors

When looking at aggregated estimates of precocity errors, there is the potential for a "netting-out" effect, referring to negative precocity errors in one component canceling out positive errors in another component. The analysis of the contribution of each component to the sum of precocity errors without the netting-out effect can be done by using absolute values of the precocity errors. A mean absolute percentage precocity error by component is calculated by dividing the mean absolute precocity error by component by its sum and expressed in percentage. In this case, the mean absolute precocity error by component is the mean of the absolute precocity errors for the 2011/2012 to 2015/2016 period, the latest 5-year period that annual precocity errors by all components are available.

7. As mentioned in the Methodology Section, the provincial statistical agencies of Quebec and British Columbia provide their most recent estimates of births and deaths to Statistics Canada. The figures are used to produce preliminary estimates.
8. For more details regarding the methodology used to estimate interprovincial migration, please refer to chapter 7 of the publication catalogue no. 91-528-X.

At the national level, the mean absolute precocity error for the total emigration[9] component contributed the most to the sum of mean absolute precocity errors (55.16%), followed by deaths (17.81%) and births (17.23%), between 2011/2012 and 2015/2016. Immigration and net non-permanent residents each accounted for less than 8.00% to the sum of mean absolute precocity errors (refer to Table 3).

Text table 3
Mean absolute percentage precocity error by components, 2011/2012 to 2015/2016, Canada, provinces and territories

	Births	Deaths	Immigration	Total emigration[1]	Net non-permanent residents	Net interprovincial migration	Total
				percent			
Canada	17.23	17.81	2.69	55.16	7.12	0.00	100.00
Newfoundland and Labrador	8.63	4.68	0.25	8.09	4.26	74.09	100.00
Prince Edward Island	7.89	11.12	0.63	11.99	9.60	58.77	100.00
Nova Scotia	9.13	10.83	0.84	15.81	7.85	55.55	100.00
New Brunswick	8.75	21.12	0.80	21.77	7.07	40.49	100.00
Quebec	3.50	3.54	1.90	55.44	10.30	25.31	100.00
Ontario	14.60	16.54	1.00	39.64	16.24	11.98	100.00
Manitoba	12.62	10.88	3.12	24.11	7.28	41.99	100.00
Saskatchewan	8.74	7.56	1.60	19.28	14.38	48.44	100.00
Alberta	8.52	4.32	0.96	12.89	17.42	55.89	100.00
British Columbia	1.27	2.00	1.40	23.87	18.74	52.72	100.00
Yukon	8.39	4.26	0.22	16.31	3.10	67.72	100.00
Northwest Territories	4.12	2.20	0.22	6.32	3.10	84.05	100.00
Nunavut	4.83	3.82	0.00	5.22	1.45	84.67	100.00

1. Total emigration includes emigration, returning emigration and net temporary emigration.

Source: Statistics Canada, Demography Division.

At the provincial and territorial level, the contribution of individual component to the sum of mean absolute precocity errors was not uniform across the country. Net interprovincial migration accounted for the largest share of the sum of mean absolute precocity errors in eleven out of the thirteen provinces and territories, ranging from 40.49% in New Brunswick to 84.67% in Nunavut. In Quebec (55.44%) and Ontario (39.64%), it is total emigration that explains the largest share of the mean absolute precocity errors (refer to Table 3).

On the other hand, immigration accounted for the smallest share of the sum of mean absolute precocity errors in all provinces and territories, with one exception. In British Columbia, births accounted for the smallest share of the sum of mean absolute precocity errors at 1.27%. For the rest of the provinces and territories, the contribution of immigration to the sum of mean absolute precocity errors was at 3.12% or below.

B. Error of closure

The error of closure measures the accuracy of the final postcensal estimates. It is defined as the difference between the final postcensal population estimates on Census Day and the enumerated population of the most recent census adjusted for census net undercoverage (CNU[1]). A positive error of closure means that the postcensal population estimates have overestimated the population.

The error of closure comes from three sources: errors primarily due to sampling when measuring the starting (2011) and end of period (2016) censuses coverage and errors related to the components of population growth over the intercensal period. For each five-year intercensal period, the error of closure can only be calculated following the release of census data and estimates of CNU.[1] The error of closure can be calculated for the total population of each province and territory as well as by age and sex. For the moment, the error is only available for total population by province and territory.

Text table 4 shows postcensal population estimates on May 10, 2016 and census counts adjusted for CNU[1] and the errors of closure for Canada, provinces and territories from 2001 to 2016.

9. Mean absolute percentage precocity error for total emigration includes the mean absolute percentages for emigration, returning emigration and net temporary emigration.

For Canada as a whole, the error of closure was estimated at 110,310 or 0.31% in 2016. This is a decrease over the error for 2011 (0.42%).

The population estimates overestimated the population of eight provinces, one territory and Canada as a whole. Five provinces posted errors of closure greater than 1% or less than -1%. Of these jurisdictions, only British Columbia's estimated population differed from the adjusted census population by more than 2% (-2.07%). In 2011, four provinces and two territories posted errors of closure greater than 1% or less than -1%.

By considering the variance in CNU, it is possible to identify errors of closure that are statistically significant. Text table 4 shows the results of this analysis.

The error of closure is statistically significant for Canada and seven provinces. This means that the population estimates significantly overestimated or underestimated the adjusted census population in these jurisdictions. As noted above, these results are due to both the sampling for census coverage studies and errors in the components of population growth over the intercensal period. Among these components, interprovincial migration and emigration are mostly associated with large errors of closure.

Text table 4
Error of closure of the population estimates, Canada, provinces and territories, 2001 to 2016

	Postcensal estimate on Census Day	Census adjusted for CNU[1]	Error of closure		CNU standard error[2]	t value[3]
	A	B	C=A-B	D=C/B*100	E	F=C/E
Geography	number			percent	number	
2016						
Canada	**36,139,555**	**36,029,245**	**110,310**	**0.31**	**43,844**	**2.52**
Newfoundland and Labrador	530,465	529,490	975	0.18	2,015	0.48
Prince Edward Island	149,116	146,371	2,745	1.88	870	3.16
Nova Scotia	948,080	941,407	6,673	0.71	3,042	2.19
New Brunswick	756,736	762,836	-6,100	-0.80	2,777	-2.20
Quebec	8,297,902	8,211,537	86,265	1.05	20,613	4.18
Ontario	13,902,359	13,841,676	60,683	0.44	33,316	1.82
Manitoba	1,313,904	1,310,260	3,644	0.28	4,829	0.75
Saskatchewan	1,145,156	1,133,196	11,960	1.06	4,651	2.57
Alberta	4,231,285	4,187,186	44,099	1.05	13,530	3.26
British Columbia	4,745,041	4,845,444	-100,403	-2.07	16,561	-6.06
Yukon	37,927	38,244	-317	-0.83	191	-1.66
Northwest Territories	44,667	44,725	-58	-0.13	257	-0.23
Nunavut	37,017	36,873	144	0.39	229	0.63
2011						
Canada	**34,417,759**	**34,273,205**	**144,554**	**0.42**	**57,546**	**2.51**
Newfoundland and Labrador	513,622	524,728	-11,106	-2.12	2,912	-3.81
Prince Edward Island	145,759	143,590	2,169	1.51	923	2.35
Nova Scotia	948,457	943,638	4,819	0.51	5,346	0.90
New Brunswick	756,547	755,101	1,446	0.19	3,335	0.43
Quebec	7,968,651	7,993,123	-24,472	-0.31	23,660	-1.03
Ontario	13,345,467	13,236,621	108,846	0.82	44,121	2.47
Manitoba	1,251,999	1,230,574	21,425	1.74	6,104	3.51
Saskatchewan	1,055,858	1,063,729	-7,871	-0.74	6,306	-1.25
Alberta	3,774,557	3,777,935	-3,378	-0.09	18,046	-0.19
British Columbia	4,543,807	4,491,451	52,356	1.17	19,494	2.69
Yukon	35,356	35,253	103	0.29	303	0.34
Northwest Territories	44,139	43,439	700	1.61	323	2.17
Nunavut	33,540	34,023	-483	-1.42	608	-0.79

Text table 4
Error of closure of the population estimates, Canada, provinces and territories, 2001 to 2016

Geography	Postcensal estimate on Census Day	Census adjusted for CNU[1]	Error of closure		CNU standard error[2]	t value[3]
	A	B	C=A-B	D=C/B*100	E	F=C/E
	number			percent	number	
2006						
Canada	**32,553,799**	**32,521,670**	**32,129**	**0.10**	**53,926**	**0.60**
Newfoundland and Labrador	508,874	510,515	-1,641	-0.32	2,710	-0.61
Prince Edward Island	137,746	137,754	-8	-0.01	701	-0.01
Nova Scotia	933,692	938,020	-4,328	-0.46	4,885	-0.89
New Brunswick	748,737	746,056	2,681	0.36	3,105	0.86
Quebec	7,644,701	7,623,482	21,219	0.28	24,077	0.88
Ontario	12,657,808	12,641,497	16,311	0.13	41,363	0.39
Manitoba	1,176,744	1,182,731	-5,987	-0.51	6,469	-0.93
Saskatchewan	987,706	991,490	-3,784	-0.38	4,805	-0.79
Alberta	3,357,637	3,408,975	-51,338	-1.51	16,091	-3.19
British Columbia	4,296,518	4,235,151	61,367	1.45	16,591	3.70
Yukon	31,146	32,177	-1,031	-3.20	194	-5.31
Northwest Territories	42,160	43,084	-924	-2.14	236	-3.92
Nunavut	30,330	30,738	-408	-1.33	176	-2.32
2001						
Canada	**31,016,011**	**30,966,063**	**49,948**	**0.16**	**44,749**	**1.12**
Newfoundland and Labrador	533,712	522,331	11,381	2.18	1,782	6.39
Prince Edward Island	138,102	136,619	1,483	1.09	775	1.91
Nova Scotia	941,533	932,528	9,005	0.97	4,170	2.16
New Brunswick	754,180	749,593	4,587	0.61	3,555	1.29
Quebec	7,390,137	7,390,359	-222	0.00	21,033	-0.01
Ontario	11,873,643	11,862,355	11,288	0.10	33,472	0.34
Manitoba	1,149,561	1,150,596	-1,035	-0.09	5,423	-0.19
Saskatchewan	1,016,762	1,000,745	16,017	1.60	4,333	3.70
Alberta	3,051,245	3,049,641	1,604	0.05	11,308	0.14
British Columbia	4,068,196	4,072,543	-4,347	-0.11	15,598	-0.28
Yukon	29,737	30,097	-360	-1.20	372	-0.97
Northwest Territories	41,152	40,655	497	1.22	362	1.37
Nunavut	28,051	28,001	50	0.18	411	0.12

1. Census net undercoverage includes the incompletely enumerated Indian reserves.

2. Census net undercoverage excludes the incompletely enumerated Indian reserves.

3. An error of closure with a t value greater than 1.96 or less than -1.96 is statistically significant at the 95% confidence level.

Source: Statistics Canada, Demography Division.

Explanatory notes for the tables

Text table 7
Annual population estimates and factors of demographic growth

Period	Population at beginning period	Natural increase	Net interprovincial migration	Net international migration	Total net migration	Residual deviation	Total growth
2000/2001	ID	D	D	D	D	D	D
2001/2002	ID	D	D	D	D	D	D
2002/2003	ID	D	D	D	D	D	D
2003/2004	ID	D	D	D	D	D	D
2004/2005	ID	D	D	D	D	D	D
2005/2006	ID	D	D	D	D	D	D
2006/2007	ID	D	D	D	D	D	D
2007/2008	ID	D	D	D	D	D	D
2008/2009	ID	D	D	D	D	D	D
2009/2010	ID	D	D	D	D	D	D
2010/2011	ID	D	D	D	D	D	D
2011/2012	ID	D	D	D	D	D	D
2012/2013	ID	D	D	D	D	D	D
2013/2014	ID	D	D	D	D	D	D
2014/2015	ID	D	D	D	D	D	D
2015/2016	ID	D	D	D	D	D	D
2016/2017	PD	R	D	R	R	...	R
2017/2018	PR	P	P	P	P	...	P
2018/2019	PP	...	...	...	...	...	...
Modified since[1]	2001/2002	2010/2011	2016/2017	2001/2002	2001/2002	2000/2001	2000/2001

... not applicable

1. Modified since indicates the year from which the data were revised since the last release. Last year's data were not modified as they are released for the first time.

Note(s): D: Final estimates. ID: Final intercensal estimates. PD : Final postcensal estimates. R : Updated estimates. PR : Updated postcensal estimates. P : Preliminary estimates. PP : Preliminary postcensal estimates.

Source: Statistics Canada, Demography Division.

Text table 8
Annual estimates of components of demographic growth

Period	Births	Deaths	In-migrants	Out-migrants	Immigrants	Emigrants	Returning emigrants	Net temporary emigrants	Net non-permanent residents	Residual deviation
2000/2001	D	D	D	D	D	D	D	D	D	D
2001/2002	D	D	D	D	D	D	D	D	D	D
2002/2003	D	D	D	D	D	D	D	D	D	D
2003/2004	D	D	D	D	D	D	D	D	D	D
2004/2005	D	D	D	D	D	D	D	D	D	D
2005/2006	D	D	D	D	D	D	D	D	D	D
2006/2007	D	D	D	D	D	D	D	D	D	D
2007/2008	D	D	D	D	D	D	D	D	D	D
2008/2009	D	D	D	D	D	D	D	D	D	D
2009/2010	D	D	D	D	D	D	D	D	D	D
2010/2011	D	D	D	D	D	D	D	D	D	D
2011/2012	D	D	D	D	D	D	D	D	D	D
2012/2013	D	D	D	D	D	D	D	D	D	D
2013/2014	D	D	D	D	D	D	D	D	D	D
2014/2015	D	D	D	D	D	D	D	D	D	D
2015/2016	D	D	D	D	D	D	D	D	D	D
2016/2017	R	R	D	D	D	R	R	R	R	...
2017/2018	P	P	P	P	P	P	P	P	P	...
Modified since[1]	2013/2014	2010/2011	2016/2017	2016/2017	2010/2011	2001/2002	2001/2002	2001/2002	2001/2002	2000/2001

1. Modified since indicates the year from which the data were revised since the last release. Last year's data were not modified as they are released for the first time.

Note(s): D : Final estimates. R : Updated estimates. P : Preliminary estimates.

Source: Statistics Canada, Demography Division.

Appendix A – Glossary

Age
Age as of July 1.

Ageing (of a population)
An increase in the **number of old persons** as a percentage of the total population.

Average age
The average age of a population is the average age of all its members.

Census coverage
Census net undercoverage: Difference between undercoverage and overcoverage.

Overcoverage: Number of persons who should not have been counted in the census or who were counted more than once.

Undercoverage: Number of persons who were intended to be enumerated in a census but were not.

Cohort
Represents a group of persons who have experienced a specific demographic event during a given year. In the cast of births, persons born within a specified year are referred to as a generation.

Components of demographic growth
Any of the classes of events generating population movement variations. Births, deaths and migrations are the components responsible for the variation since they alter either the total population or the age and sex distribution of the population.

Demographic dependency ratio
The **ratio of the combined population** aged from **0 to 14 years old** and the population **aged 65 years** and over to the population aged from **15 to 64 years old**.

Emigrant
Canadian citizen or **immigrant** who has left Canada to establish a residence in another country, involving a change in usual place of residence. Emigration may be either temporary or permanent. Where the term is used alone, it references to a person's permanent emigration which involves severing residential ties with Canada and acquiring permanent residency in another country.

Error of closure
Difference between the **postcensal estimate** at the census date and the results of the census adjusted for **census net undercoverage** (including adjustment for incompletely enumerated Indian reserves).

Generation
Unless otherwise specified, refers here to a group of persons born within a given period. The 2001 generation represents people born during the year 2001.

Immigrant
Within the framework of this publication, the terms immigrant, landed immigrant and permanent resident are equivalent. An immigrant refers to a person who is or has ever been a landed immigrant (permanent resident) and who has been granted the right to live in Canada permanently by immigration authorities. Immigrants are either Canadian citizens by naturalization (the citizenship process) or permanent residents under Canadian legislation. Some immigrants have resided in Canada for a number of years, while others have arrived recently. Most immigrants are born outside Canada, but a small number are born in Canada. Also, children born in other countries to parents who are Canadian citizens that reside temporarily in another country are not included in the category as they become Canadian citizens at birth.

International migration
International migration represents movement of population between Canada and a foreign country which involves a change in the usual place of residence. A distinction is made with regard to **immigrants**, **emigrants**, **returning emigrants**, **net temporary emigration** and **net non-permanent residents**.

Interprovincial migration
Interprovincial migration represents all movement from one province or territory to another involving a change in the usual place of residence. A person who takes up residence in another province or territory is an **out-migrant** with reference to the province or territory of origin and an **in-migrant** with reference to the province or territory of destination.

Median age
The median age is an age "x", such that exactly one half of the population is older than "x" and the other half is younger than "x".

Natural increase
Variation in the population size over a given period as a result of the difference between the numbers of births and deaths.

Net international migration
Net international migration is obtained according to the following formula: **Immigrants** + **returning emigrants** + **net non-permanent residents** – (**emigrants** + **net temporary emigrants**).

Net interprovincial migration
Net interprovincial migration represents the difference between **in-migrants** and **out-migrants** for a given province or territory.

Net non-permanent residents
Net non-permanent residents represent the variation in the number of non-permanent residents between two dates.

Non-permanent residents
A non-permanent resident is a person who is lawfully in Canada on a temporary basis under the authority of a valid document (work permit, study permit, Minister's permit or refugee) issued for that person along with members of his family living with them. This group also includes individuals who seek refugee status upon or after their arrival in Canada and remain in the country pending the outcome of processes relative to their claim. Note that Immigration, Refugees and Citizenship Canada (IRCC) uses the term temporary resident rather than non-permanent resident.

Net temporary emigration
Net temporary emigration represents the variation in the number of temporary emigrants between two dates. Temporary emigration includes Canadian citizens and **immigrants** living temporarily abroad who have not maintained a usual place of residence in Canada.

Population
Estimated population and population according to the census are both defined as being the number of Canadians whose usual place of residence is within that area, regardless of where they happened to be on Census Day. Also included are any Canadians staying in a dwelling in that area on Census Day and having no usual place of residence elsewhere in Canada, as well as those considered **non-permanent residents**.

Population estimate

a. **Postcensal:** Population estimate produced by using data from the most recent available census adjusted for **census net undercoverage** (including adjustment for incompletely enumerated Indian reserves) and estimate of the **components of demographic growth** since that last census. This estimate can be preliminary, updated or final.
b. **Intercensal:** Population estimate derived by using **postcensal estimates** and data adjusted for **census net undercoverage** (including adjustment for incompletely enumerated Indian reserves) of censuses preceding and following the year in question.

Population growth or total growth
Variation of population size between two dates. It can also be obtained by summing the **natural increase**, **total net migration** and if applicable, subtract **residual deviation**. It can be positive or negative.

Precocity error
Difference between preliminary and final estimate in terms of its relative proportion of the total population for the relevant geographical area. It can be calculated for either population estimates or components of population growth.

Rate

Refers to the ratio of the number of events estimated in a year (t, t+1) to the average populations at the beginning and the end of the period. In this regard, births, deaths, immigration rates, etc are calculated. Generally, the rates are expressed in per 1,000.

Census net undercoverage of population rate: Difference between the census undercoverage rate and the census overcoverage rate.

Demographic growth rate or population growth rate: Ratio of population growth between the year t and t+1, to the average **population** of both these years. The rate is generally expressed in per 1,000.

Overcoverage of population rate: The ratio of the number of persons who should not have been counted in the census or who were counted more than once to the total number of persons that should have been enumerated in the census. Generally, the rate is expressed in percentage.

Undercoverage of population rate: The ratio of the estimated number of persons not enumerated in the census (who were intended to have been enumerated) to the total number of persons that should have been enumerated in the census. Generally, the rate is expressed in percentage.

Residual deviation
Difference between demographic **population growth** calculated using **intercensal estimates** of population between two dates and that obtained by the sum of the components for the same period. This deviation results from the distribution of the **error of closure** (based on the number of days) over the months related to the five-year period.

Returning emigrant
Canadian citizen or **immigrant** having previously emigrated from Canada and subsequently returned to the country.

Sex ratio
The ratio of the number of men to the number of women. This is not to be confused with the sex ratio at birth, which is the ratio of the number of live-born boys to the number of live-born girls. This ratio is usually expressed as an index, with the number of females taken to be a base of 100.

Sprague coefficients

Series of factors which, when multiplied to a population distributed by multiples age groups, give a distribution of the same population by single years of age.

Total net migration
Sum of **net international** and **net interprovincial** migration.

Vital statistics
Includes all the demographic events (births, deaths, marriages and divorces) for which there are a legal requirement to inform the Provincial or Territorial Registrar's Office.

Year
Unless otherwise specified, the term "year" refers to the period beginning July 1 of a given year and ending June 30 of the following year.

Appendix B – Sources and remarks

Base population:

May 10, 2016 Census of Population adjusted for census net undercoverage and incompletely enumerated Indian reserves.

2016 Census: Statistics Canada, Census of Canada, 2016, Catalogue no. 98-501-X.

Census net undercoverage: See The Daily, September 27, 2018.

Incompletely enumerated Indian reserves: See The Daily, September 27, 2018.

Births and deaths

Statistics Canada, Health Statistics Division.

Statistics Canada, Demography Division, Catalogue no. 91-215-X, annual.

Births
Fertility rates for 2016 based on births by age group of the mother provided by Health Statistics Division applied to the female population estimates by age group at the beginning of the quarter. Births for Quebec and British Columbia were provided by their respective agencies.

Deaths
Mortality rates for 2016 based on deaths by age group and sex provided by Health Statistics Division applied to the population estimates by age group and sex at the beginning of the quarter. Deaths for Quebec and British Columbia were provided by their respective agencies.

Immigration

Estimates are based on the immigrant files provided by Immigration, Refugees and Citizenship Canada (IRCC) received on August 21, 2018.

Emigration

The estimates are produced by Demography Division using:

- data from Canada Revenue Agency (CRA) Canada child benefit files (CCB) program. The last year of data used is 2015/2016;
- tax data calculated using T1FF[4] file provided by the Income Statistics Division of Statistics Canada. The last year of data used was 2015/2016;
- data provided by the U.S. Department of Homeland Security, Office of Immigration Statistics. The last year of data used was 2015/2016;
- data on the number of adult and children emigrants from T1FF[4] file used for the provincial distribution of adults. The last year of data used was 2015/2016.
- For estimates after 2015/2016, we:
    - Calculated the 2015/2016 emigration rate for Canada;
    - Applied this rate to Canada's population on July 1st at the beginning of the period to be estimated;
    - Distributed the number of emigrants for Canada by the province and territory according to the provincial distribution of 2015/2016;
    - Distributed these data by month according to the provincial or territorial emigration seasonality of 2015/2016.

Returning emigration

The estimates are produced by Demography Division using:

- data from Canada Revenue Agency (CRA) Canada child benefit files (CCB) program. The last year of data used was 2015/2016;
- For estimates after 2015/2016, we:
    - Calculated the 2015/2016 returning emigration rate for Canada;
    - Applied this rate to Canada's population on July 1st at the beginning of the period to be estimated;
    - Distributed the number of returning emigrants for Canada by the province and territory according to the provincial distribution of 2015/2016;
    - Distributed these data by month according to the provincial or territorial returning emigration seasonality of 2015/2016.

Net temporary emigration

The intercensal estimates are produced by Demography Division using:

- data from the Reverse Record Check (RRC) of the 2016 Census;
- 2016 Census – question on the place of residence 5 years ago;
- estimates of returning emigrants for 2011 to 2016 intercensal period;
- For the postcensal estimates, we:
    - Calculated the 2015/2016 net temporary emigration rate for Canada;
    - Applied this rate to Canada's population on July 1st at the beginning of the period to be estimated;
    - The result for the year is distributed into monthly estimates using an applied seasonality that is an average between zero seasonality and the seasonality of emigration;
    - The monthly estimates are then distributed by province and territory according to the provincial distribution of the intercensal data.

Non-permanent residents

The estimates are produced by Demography Division using the Global Case Management System (GCMS) files from IRCC. These files, received on August 21, 2018, document the number of persons holding permits/ authorizations or claiming refugee status. Net data from July 2001 to June 2011 have been revised using the Field Operational Support System files (FOSS) files from August 19, 2015.

Interprovincial migration

The estimates are produced by Demography Division using:

- adjusted migration data for children from Canada child benefit (CCB) program from Canada Revenue Agency (CRA);
- factors ($_{1}G$) corresponding to the ratio of the migration rate of all children to the migration rate of who are registered to the CCTB program children calculated using 2016/2017 tax file data;
- factors ($_{jk}F$) used to calculate adult migration and corresponding to the ratio of the adult to child migration rates, calculated on a three-year basis using tax file data for 2014/2015, 2015/2016 and 2016/2017.

Note: Due to a change in methodology, we remind you that the in- and out- interprovincial migrants cannot be summed in order to obtain a different period (for example, the sum of the quarterly estimates is not equal to the annual estimates). This method has been applied starting with July 2011.

Related products

Publications

91-003-X	Canadian Demographics at a Glance
91-209-X	Report on the Demographic Situation in Canada
91-214-X	Annual Demographic Estimates: Subprovincial Areas
91-215-X	Annual Demographic Estimates: Canada, Provinces and Territories
91-520-X	Population Projections for Canada, Provinces and Territories
91-528-X	Population and Family Estimation Methods at Statistics Canada

Tables

17-10-0005-01	Population estimates on July 1st, by age and sex
17-10-0006-01	Estimates of deaths, by age and sex, annual
17-10-0008-01	Estimates of the components of demographic growth, annual
17-10-0009-01	Population estimates, quarterly
17-10-0014-01	Estimates of the components of international migration, by age and sex, annual
17-10-0015-01	Estimates of the components of interprovincial migration, by age and sex, annual
17-10-0016-01	Estimates of births, by sex, annual
17-10-0020-01	Estimates of the components of interprovincial migration, quarterly
17-10-0021-01	Estimates of the components of interprovincial migration, annual
17-10-0022-01	Estimates of interprovincial migrants by province or territory of origin and destination, annual
17-10-0040-01	Estimates of the components of international migration, quarterly
17-10-0060-01	Estimates of population as of July 1st, by marital status or legal marital status, age and sex
17-10-0045-01	Estimates of interprovincial migrants by province or territory of origin and destination, quarterly
17-10-0061-01	Estimates of the number of census families as of July 1st
17-10-0059-01	Estimates of the components of natural increase, quarterly
13-10-0708-01	Deaths, by month
13-10-0709-01	Deaths, by age group and sex
13-10-0415-01	Live births, by month
13-10-0416-01	Live births, by age of mother

Surveys

3231	Vital Statistics - Birth Database
3233	Vital Statistics - Death Database
3601	Estimates of Total Population, Canada, Provinces and Territories
3604	Estimates of Population by Age and Sex for Canada, Provinces and Territories
3605	Estimates of Population by Marital Status, Legal Marital Status, Age and Sex for Canada, Provinces and Territories
3606	Estimates of the number of Census Families for Canada, Provinces and Territories